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THE PSYCHOLOGY OF "DEAFNESS:" WITH SUGGESTIONS AS TO A MORE COMPREHENSIVE PLAN OF TREATMENT.*

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Almost since the beginnings of otology, deafness has been under more or less constant investigation and study. As a result, a considerable store of actual knowledge has been accumulated, but chiefly in one direction,—i. e., of the pathologic changes associated with certain forms of deafness. In the development of a practical system of treatment, our progress has not kept pace.

To our failure to reach more uniformly practical results there are several contributing factors. In the first place, some of the underlying lesions are clearly beyond the reach of local treatment. It may be that we have narrowed our mental vision to conform too closely to our conception of certain post-mortem changes seen or recorded, and of others observed, and perhaps not always correctly interpreted, during the physical examination of patients. There is a psychological, as well as pathological, factor in most cases of advanced auditory impairment, recognition of which would surely lead to a broader and more comprehensive view of the whole subject of deafness. It is to this phase of the subject, in its relation to the practical problems of treatment, that I would like to engage your attention.

No experienced observer of the hard-of-hearing can fail to have been impressed with the different grades of handicap under which

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different individuals, having the same degree of auditory impairment, labor. That is to say, of two individuals in whom careful hearing tests show the same degree of impairment, one may have the greatest difficulty in interpreting the average conversational voice, while the other may be under no obvious disadvantage in ordinary conversation. Such differences can be explained in one or both of two ways, viz.: (1) that the one is able to make better use of the same degree of residual hearing power,—i. e., to interpret better such speech sounds as still come to him; or (2) that he is possessed of a quicker and more synthetic type of mind, enabling him to grasp more quickly the sense, or meaning, of a sentence imperfectly heard; or in other words, to supply from what he does hear such parts of a conversation as are not clearly heard, or even are not heard at all.

Such a hypothesis, if accepted, would justify certain practical inferences; for it is clear that all partially deaf individuals would receive the maximum of practical aid and relief if, in addition to the best obtainable results from local treatment, they could be taught (a) a keener and more accurate differentiation of such speech components, however diminished, as still reach the ears; and (b) a quicker and more intuitive grasp of the drift of a conversation from such parts of it as are heard and recognized.

There is still another factor which can and should be brought to the aid of patients whose impairment has reached a certain grade, viz., cultivation of the faculty of unconscious lip-reading which all partially deaf people in some degree possess.

As a preface to what I have to say, I would like your consideration of the following propositions:

I. The blind, being deprived of sight as a means of acquiring knowledge, can under scientific methods of instruction so cultivate the senses of touch and hearing as to compensate in a large degree for the loss of vision.

II. The totally deaf under competent instructors may so cultivate the eyes in the interpretation of the movements of the lips as to compensate largely for the loss of hearing, thereby retaining, or in some cases acquiring, the faculty of verbal intercourse.

The above represent facts universally recognized. My third proposition embodies a fact which has apparently escaped recognition, but which seems to me in some degree self-evident.

III. The partially deaf can under rational methods of practice so train the minds and ears in the better interpretation of whatever voice sounds are still heard as to increase materially the

value of such hearing power as is still theirs, or may under treatment be restored to them.

The Speech Test: The final test of the usefulness of the ears to the patient, and the only one which need be discussed here, is his ability to hear and understand the conversational voice. The usual method of applying it is known to every aurist. Either words or numbers are used. The patient stands at one end of the room and closes with a finger the ear not under examination. The examiner, standing some distance from him, speaks or whispers the words or numbers he wishes to use, the patient having been instructed to repeat them after him. If he repeats the words correctly, the examiner must either speak in a lower voice or whisper, or increase the distance between himself and the patient. If the patient fails to repeat the words correctly, the examiner moves gradually nearer until he can do so without hesitation or error, this distance being recorded as his hearing distance for the voice or whisper in the ear examined. The test is then repeated in the opposite ear.

The speech test, thus applied, while giving a fairly practical impression of the functional loss at the time of a first examination, is far from scientifically accurate and becomes progressively less reliable if frequently repeated. As a comparative test—i. e., for comparing the acuity of hearing at different times—its value is practically negated by several sources of error which may be mentioned in the following order:

- (1) If numbers only are used, the patient quickly becomes accustomed to the sounds of the different numerals as spoken by the physician and is soon able to repeat them correctly or with a much smaller percentage of errors. He shows, therefore, an improvement which may be apparent rather than real.

- (2) If words are used, he is apt soon to learn the physician's test-word vocabulary, and he also learns to interpret better the more difficult or faintly-heard speech components as spoken by the physician; his answers may therefore indicate an improvement where no actual auditory gain has been obtained.

- (3) When words of more than one syllable are used, certain consonants may be wholly or nearly inaudible to the patient, yet the combination and sequence of the vowel sounds and such consonants as he does hear may give him the clue, and he repeats correctly a word he has not clearly heard. This is a useful faculty which is possessed in varying degree by different partially deaf individuals; but it reduces the value of the word test as a reliable measure of auditory acuteness.

(4) All partially deaf persons hear certain consonants more distinctly than others. This varying hearing distance for words in which different speech components preponderate renders it difficult or impossible to arrive at an exact hearing distance for conversational speech.

A few instances based on actual experience may illustrate some of the difficulties recorded above. Bezold advised the use of numbers, to the exclusion of words, in testing. I at one time followed this practice, but found that the average patient soon shows an improvement out of all proportion to that shown by other tests. This, I now know, is explained by the fact that the patient, expecting only numbers, is soon able to associate with the sound as it reaches him the number it most resembles and in fact represents. In other words, the correct answer is not so much the result of improved hearing as of acquired ability to translate quickly a diminished or distorted sound into its correct equivalent. A proof of this is the fact that if one suddenly changes from numbers to the use of words, the patient is immediately at sea and his apparent functional improvement disappears. I have found the names of cities convenient test words, and have repeatedly had the following experience with the word, Chicago. Having called off several numbers which the patient has repeated correctly—e. g., 13, 27, 43, etc.—I have suddenly interjected the word "Chicago," to which the patient has replied with "sixty-four" or "seventy-four," numbers which have a remote general similarity in sound to Chicago. This has occurred not once or twice but any number of times and with as many patients. It not only proved that this word was not correctly heard, but also threw in doubt his hearing of the numbers which he had been able to repeat correctly. Another common experience has its explanation in the patient's effort to supply mentally the elements he does not hear in a word. Thus one calls the word "master" and the patient answers with "faster" or "pastor." Evidently the initial M was not heard or at least not identified. Had he chanced to repeat the word, master, correctly, we should have given him credit for having heard it correctly, yet his answer would still have been the result of a partial guess. These few instances suffice to show how unreliable and misleading may be the usual "speech test" as a measure of the patient's actual hearing power.

Monosyllables as Test Words: In trying to devise a more reliable speech test, it occurred to me that the use of monosyllables would go far to eliminate the sources of error referred to above.

The advantage of monosyllables lies in the fact that, since they contain no sequence of vowel sounds to suggest the word, the patient is left with no other clue than what he actually hears.

A preliminary examination for diagnostic purposes very properly includes a separate functional test of each ear, and for this purpose the acoumeter, tuning forks and Galton whistle are the most reliable instruments. For determining the practical difficulties and needs of the individual patient, however, there is obvious advantage in a qualitative test of the combined efficiency of the two ears in interpreting the conversational voice. In using the test herein described, the patient is, therefore, not required to close either ear.

The appended list represents a table of carefully selected monosyllables which are used in the following way: The patient is seated within 4 or 5 feet of the examiner, but looks away from him to eliminate possible lip-reading. He is instructed to repeat the words or sounds as they are heard and not try to translate the sounds as they reach his ears into what he thinks should be their equivalents. Also, he is urged to repeat the words or sounds promptly.

bad	cad	dab	fad	gap	hard	jay	lad	mad
band	can	date	fall	game	hate	jot	lip	map
bed	come	dope	fun	gone	hold	jest	let	meet
bend	cue	dew	fall	gold	hint	jane	lump	met
bard	card	darn	feel	gulle	hope	jog	lord	mint
bold	cold	dip	fine	goat	heart	just	leap	must
bond	con	dun	fold	gilt	heat	join	late	most
nap	pad	rat	sat	tap	vat	wall	zeal	
not	pot	rot	sap	top	vent	went	zinc	
neat	pet	reap	seat	team	vice	wind	zone	
net	pole	rest	sole	tent	vault	wart	zest	
note	Pete	rule	sun	tone	vow	wet	zoo	
nut	pun	run	sign	ton	vold	win		
night	pine	Rhin	sort	time	vine	wine		

Beginning with the first, or B, column, the examiner calls the words in a fairly loud or average tone of voice from left to right,—first the words at the top of each column, then the second line from the top, and so on through the entire table. Only the patient's errors are noted on the test card. Thus if a word is repeated correctly, absence of written comment signifies this fact; if incorrectly, the patient's answer is noted opposite the misinterpreted word. When the whole table has been called off in the manner described, one has only to note the number and character of errors falling in each column to determine the comparative loss of hearing for the various consonants.

Treatment. A diagnosis of tympanic deafness having been made, the first duty of the aurist is to utilize every rational means known

bad	cad (cat)	dab (ab)	fad (fat)	gap	hard (are)	jay (day)	lad (glad)	mad
band (and)	can	date	fill	game	hate	jot	lip (lift)	mop (water)
bed (at)	come	dope	fun (one)	gone (bon)	hat (cat)	jest (chest)	let (that)	meet
bend	cue	dew	fall	gold (bold)	hold (cold)	Jane	lump (love)	mint
bard	card	darn	feel	guile (bile)	hint	jog	low (glow)	must
bold	cold	dip (hip)	fine (wine)	goat (wrote)	hope	just	leap (reap)	most (host)
bond	con	dun	fold (cold)	gilt (kit)	heart	join (joy)	late	met (went)
nap (lap)	pad	rat	sat	tap	vat (that)	wall (walk)	zeal	
not	pot (hot)	rot (lot)	sop	top (cop)	vent (bent)	went	zinc	
neat (meat)	pet	reap	seat	team	vice	wind	zone	
net (met)	Pete	rest	sole	tent (ket)	vault (want)	wart (want)	zest	
note	pole (old)	rule (rude)	sun	tone	vow (flower)	wet (ret)	zoo	
nut	pun (ton)	run	sign	ton	vold (boy)	win		
night (light)	pine	Rhine	sort	time	vine (wine)	wine		

to otology to bring about actual restoration of the auditory function. The means to this end,—e. g., correction of naso-pharyngeal lesions, of tubal congestion or constrictions, limited use of inflation, etc.,—are known to all aurists and need not be elaborated here. The point I wish to make is that all other measures and considerations are of secondary importance until the maximum gain in actual hearing-power has been obtained.

In most cases of fairly advanced impairment *there remains after the best possible results of local treatment have been obtained, an irreducible grade of residual deafness before which the aurist stands helpless, and which may leave but little of practical gain to the patient.* From this point, the problem of further relief is either a hopeless one, or must be met by efforts in two directions: (1) To train the ears to a keener analysis of such sound impressions as still reach them; and (2) To train the mind to the habit of quick, intuition deduction from what is heard.

The following test card of a patient under my care shows somewhat graphically the comparative loss of hearing for different consonants. The bracketed words indicate her errors. The impairment in this case being fairly advanced, it was necessary to call the words in rather loud tones, so that perfect hearing cannot be assumed even in those columns in which no errors are recorded.

Analysis of the above shows apparently perfect recognition of C (hard C or K), S and Z; good hearing for R and W; fair hearing for B, D, J, and T; poor hearing for F, L, M, N, and P; with hearing for G and V exceedingly poor.

I made out for this patient the preliminary list of practice words which appears below. I use the word "preliminary" because it is necessary to lessen the monotony of such work by changing the list of words from time to time. It was urged that she enlist the aid of some member of her family with sufficient patience to call the words off to her several times daily.*

late	guest	vest	kneel	mall
fate	lest	feel	peel	nail
gate	nest	leal	veal	pail
mate	pest	meal	fall	vail

The first experiences with such exercises are likely to be discouraging. After several days of practice the patient may find that

*The assistant in these exercises should not lower his voice unduly. The purpose is not to test the hearing but to train the ears to a keener detection of slight and diminished sound vibrations. It is necessary, therefore, that the voice be raised at least to a point at which a definite sound variation for each consonant is audible to the patient.

with a short list of twenty words or less, he is still at fault. Usually, however, there is some demonstrable improvement and in the case of rhyming monosyllables, if the order in which they are called is constantly varied, it is clear that no real improvement is possible except through a better differentiation of the initial consonants. Any sustained improvement, however slight, must therefore indicate a better recognition of just those speech components which have been proved to be his chief difficulty.

In order to determine the possibility of still further improvement, I usually call the words several times in varying order, noting those which still confuse him. It may be that among other uncertainties, the words bent and tent confuse him:—i. e., that "bent" is frequently interpreted as "tent" and vice versa. It is now possible to determine whether these two words actually sound exactly alike to him by calling them together several times, varying their order and requesting the patient to repeat them in the order given. It is a common experience that a patient who may be quite uncertain in his recognition of two words spoken singly and separately, may readily distinguish between them when spoken together, or in quick succession. For example, calling the two words in question thus,—tent, bent; bent, tent; tent, tent, etc., it will usually be found that he has absolutely no difficulty in repeating them correctly. This proves fairly conclusively that his ear does detect a difference between the initial b and t. It also justifies one in saying to him, "If you can distinguish these two words spoken together, with further practice you should in time be able to distinguish and recognize the b and t sounds singly, or at least whenever they are spoken in tones of a certain pitch and intensity and with average clearness of articulation."

When a patient after a little practice cannot distinguish between two such rhyming monosyllables spoken in quick succession, it must be inferred that the initial consonants are actually lost to him, and that further effort along this line is useless.

As to the possibilities of such exercises: taken alone, they have little practical value. Whatever advance the patient may make in the keener analysis of diminished speech sounds, a sudden lowering of the speaker's voice or a lapse into careless or slurring articulation, may place them absolutely beyond his range of audition. The purely auditory effort and auditory practice of such exercises are absolutely necessary, however, if only to correct the tendency to relaxation of all effort to hear and understand, which frequently results from advanced and advancing deafness. In any case, the best

possible results from these exercises constitute only one step toward a more efficient use of the ears. In other words, whatever gain may come from this source can have no practical value unless at the same time the mind be trained to a quicker and more intuitive faculty of deduction from what is heard. The mental attitude of the hard-of-hearing is, therefore, a factor which must be taken into account.

Mental Attitude of the Hard-of-hearing. Psychic Factor in Deafness. One of the most serious and deplorable results of advancing deafness is its psychic effect upon the individual, which may take the form of a gradual and subconscious surrender of his place in relation to the social and working world about him. The effect is in some degree analogous with the change occasionally induced by old age. The individual, realizing that he is at a disadvantage as compared with those of normal hearing, becomes indifferent to, or shuns, society and finally accepts the minor role he must henceforth play in life. In exceptional instances, of which many striking examples might be adduced, this comparative isolation may lead to a concentration of energy upon certain productive fields of endeavor with a realization of proportionate results. More frequently the tendency is toward a curtailment or minimizing of all productive effort. The patient finally acquires the habit of explaining all the failures and shortcomings of his life as the result of his deafness. The logical result of this mental attitude, acting as part of a vicious circle, is paralysis of all constructive effort. The patient therefore reaches in comparative youth the mental bias of old age.

The above describes a condition of which the patient may or may not be conscious. There is also in many cases a psychic element in the deafness itself of which a word should be said.

It is clear that normal hearing of speech is a dual process, including (a) reception and appreciation of words and sentences as sounds; and (b) the subconscious conversion of these sounds into the thoughts of the speaker. *Up to a certain stage in every case of deafness, varying with different individuals, the actual auditory impairment is compensated for by the mental processes of the patient.* This compensatory feat, when carried beyond a certain grade of actual impairment, may be merely the expression of a naturally acute and alert mentality, or it may be the result of conscious effort and self-training. The reverse picture is seen in the numerous class of partially deaf individuals who, as the acoustic function fails, relax all mental effort to compensate for this loss. The representatives of this class are frequently quite frank in acknowledging their deafness and are content to throw complete responsibility for the conduct of

a conversation on the other person. If a sentence is not completely heard, they ask to have it repeated. In some cases, the habit of asking others to repeat becomes so fixed that it may be resorted to when the gist of a sentence or conversation has been, or might easily be, correctly construed. I have frequently seen a deaf person ask to have a remark repeated and then—this request being ignored—reply a minute or two later with perfect understanding. This phenomenon may be explained in one of two ways:—either (a) that from fear of not answering correctly, he had formed a habit of taking time for his reply; or (b) that he had caught at the time only certain leading words from which he had later deduced the whole. In either case it is clear that the incapacity for conversation may depend in some degree upon faulty mental habits or processes which, if due to timidity, morbid fear of making a false reply, etc., may actually amount to a psychosis.

Actual auditory impairment or its influence upon the patient may, then, in effect be augmented by (1) positive disinclination for any conversational effort, especially with strangers; and (2) when engaged in conversation, by a species of mental inertia adding materially to his practical deafness.

To combat these tendencies it is absolutely essential that the patient himself be stimulated to new and sustained effort in his own behalf. What such a patient needs is not the addition of a few inches or a few feet to his hearing distance for watch or acoumeter, nor the appreciation of a tuning fork one or two notes lower in the musical scale, but the practical stimulus and encouragement of increasing ability to interpret correctly the human voice.

That the ability to follow and interpret speech may with the hard-of-hearing be largely a psychological process may not at first seem clear. This hypothesis is less difficult to accept, however, if we consider for a moment the contrasting mental qualifications of people with normal hearing. We know, for example, that there are (a) men with quick, synthetic minds, trained to close and concentrated attention, who can glance through a printed page, hardly reading it line by line, and yet grasp the subject-matter and hold it; and (b) that there are others who must read more slowly, carefully weighing each sentence or paragraph as they proceed, and may thus master the contents; and (c) still others who must read and re-read—perhaps many times—before they can assimilate what they have read. It seems a fair deduction that any fixed grade of auditory impairment would in general incapacitate the representatives of the first class least, and those of the third class most; for the former

would almost inevitably make better use of what they actually hear. It is at least clear that if a person with a certain fixed grade of auditory impairment exhibits a capacity for interpreting conversational speech in excess of that shown by the average sufferer from the same grade of deafness, this superiority must be psychological, or due to variations in the conscious or subconscious mental processes of the individual.

Now let us try briefly to analyze the mental processes of the exceptional individual who thus in some degree escapes the penalty of his auditory defect. If his deafness is at all advanced, it is hardly possible that he will be able to hear every word as spoken by the average speaker. As with the lip-reader, in certain sentences he catches a word here and there, and from these deduces the words which have escaped him. Other sentences he hears completely; of others, only one or two leading words which he may carry subconsciously in memory and piece-out later into their equivalent sentences. This is a subconscious faculty which all partially deaf people of average mentality possess and practice to some extent. Still other sentences he loses wholly, but picks up the line of thought from what follows and so keeps in touch with the speaker. This process is by no means phenomenal, and finds its analogue in the stage at which every linguist arrives in the study of a foreign language when he is able to take part in, and follow the drift of, a conversation, though many words and even sentences may escape him. And we may stretch this comparison a little further, for it is a familiar fact that one person may make practical use of a language of which he possesses a very meagre knowledge and speak quite glibly, while another with a far broader and a more accurate knowledge is quite unable to do so. It is a difference not of intellect nor even of intelligence, but rather of mental training and largely of mental habits. The same differences explain the variations in the handicap of the hard-of-hearing.

Mental Practice. The instructing of a partially deaf individual in the better use of his mind as an aid to hearing may seem an exceedingly difficult task. As a matter of fact, the directions for such practice are comparatively few and simple. They may be briefly outlined as follows:

- (1) He must seek frequent opportunities for conversation—with only one person at a time—but with as many different persons as possible.
- (2) He must develop and practice the habit of undivided attention. This at first entails both auditory and general nerve strain.

and is purely an exercise of the will. When through auditory and nervous fatigue the attention falters, it is better that the conversation be ended.

(3) Regarding these conversations purely as opportunities for practice, he must divest his mind of anxiety lest he fail to hear every word said. His aim is to grasp and follow the speaker's thought. If he is over-anxious to hear each word, he is the more easily confused by whatever escapes him, and so loses the significance of what he has heard and what follows.

(4) He must not, therefore, hold himself to the task of hearing every word or even clause, but must focus his efforts upon deducing from what he does hear the general trend of what is said.

(5) He must resist the inclination to unnecessary interruptions. If instead of asking the speaker to repeat a word or clause he has not clearly heard, he sharpens his wits to catch the speaker's thought from what follows, he will often be able to do so; and frequently, also, the sentence he has not clearly heard will recur to him in memory and incompleted form, thus supplying the gap in the chain of thought.

(6) He should cultivate the habit of constantly watching the lips of a person speaking to him.

Naturally, one prerequisite to the success of such a method has to do with the patient himself,—i. e., he must possess, (a) fair average intelligence, and (b) the desire *and will* to learn.

With regard to the importance of watching the lips: Every aurist recognizes the fact that many of his deafer patients are unconscious lip-readers. Yet aurists have never taken account of this observation as pointing to a fact which could be turned to the advantage of the hard-of-hearing. J. A. Pierce* believes that speech reading is a universal faculty,—i. e., a faculty possessed by those of normal hearing as well as by the deaf, and which may be used by each according to the individual need. The writer has proved by very simple experiments, which need not be recounted here, that every partially deaf person has this latent faculty in some degree developed. Many of them look into the eyes of a speaker as do people with normal ears, and only incidentally and subconsciously note and interpret the more conspicuous lip-movements. Systematic watching of the lips not only helps to cultivate the habit of undivided attention, but at the same time utilizes an aid which inevitably increases with use.

To what extent may lip-reading be utilized by the otologist for the relief of the hard-of-hearing? As bearing upon this question, a personal experience of the writer may be cited. He has for many

*Volta Review, October, 1914.

years been conscious of some impairment of hearing which, however, has been so gradual in its progress that he still finds no difficulty in that crucial test, a general conversation, and can still enjoy a play from most seats in the parquet floor of a theatre. In short, he as yet experiences no practical handicap from this source. When, however, he began to experiment with monosyllables in testing the ears, he met with this practical obstacle:—in calling off the monosyllables to patients, he found that he himself was frequently at a loss as to the correctness of their replies. Being anxious to "try out" this test to a conclusion, and seeing no other way, he at once took up the study of lip-reading under competent teachers. He did not prove a very apt student from the practical viewpoint, for one reason perhaps because he never found time to practice the exercises between lessons. But the theory and method were soon learned.

Later he took up again the monosyllable test, and now by watching the lips of patients, he had no difficulty whatever in determining whether they answered correctly or incorrectly.

The next experiment was a natural sequence of the above experience. In the case of certain patients with fairly advanced auditory impairment, and after the best results from local treatment and the auditory practice methods described in this paper had been obtained, the writer tried giving brief explanations of the principal lip-movements with exercises for home practice. In every case it was found that the patient, bringing his eyes to the aid of his ears, was soon able to distinguish the words with certainty, even though spoken in a lower tone of voice, or in some cases without voice.

Apparently, lip-reading has been regarded by aurists generally as a last resort for the totally deaf. This view is not only incorrect, but works injustice to a large class of patients. It may be well, therefore, to state briefly the very different purposes and functions of lip-reading (a) as a substitute for hearing (i. e., for the totally or extremely deaf); and (b) as an aid to hearing (i. e., for the hard-of-hearing).

The totally or profoundly deaf person, depending solely on sight, must recognize both the consonant and the vowel sounds from the movements of the speech organs; and from such words as he detects must grasp the main subject-matter, and then keep in touch with the train of thought from what follows. This obviously must with many individuals be an exceedingly difficult faculty to develop. The hard-of-hearing person, on the other hand, has no such difficult task to master. He may hear all the vowel and diphthong sounds perfectly, and the very combination and sequence of the vowel

sounds make many leading words perfectly clear to him. Certain consonants, however, are heard with great difficulty, and all are heard less distinctly than normally. To such a patient the average speaker's voice comes loudly enough, but the words lack definition because he fails to distinguish many essential speech components. For him, therefore, even a moderate familiarity with speech-reading helps to define just those sound variations which his ears fail to detect. The hearing test described in this paper shows fairly definitely just what speech components constitute the patient's chief difficulty, and it is easily within the province and power of the otologist to direct him in a course of exercises which will place this important aid at his disposal. Should the results in certain cases be such as to lead the patient away from the aurist and to exclusive dependence upon speech reading, it will be a simple matter to refer him to more competent special teachers, and the aurist will not have failed in his purpose, for he will have led this particular patient, and without discouragement to him, along the road to self-dependence, and to the development of a useful and reliable aid to "hearing."

Analysis of this paper will show that it contains no substitute plan of treatment displacing old and approved therapeutic means. Rather, it is a plea for enlarging the scope of otological influence and usefulness in this particular field. There is need of a broader conception of the relation of otology to the problems of the deaf. If we recognize certain types of auditory impairment as imposing a burden which local treatment fails adequately to relieve, it is clear that the aurist must either face a hopeless situation, or make use of all or any supplementary agencies through which such patients may realize more practical results.

To epitomize: What may be done for the patient whose impairment of hearing has reached the stage of actual inconvenience, i. e., of auditory, and consequent nervous, strain? I should say that our efforts in his behalf should be in the following directions: We should exhaust every known, rational means to restore, or at least improve, his actual hearing power; his ears should be trained to the keenest interpretation of such sound impressions as still reach them; the faculty of intuitive deduction from what is heard should be developed to the patient's maximum limit; and the eyes should be trained to co-operate with the ears in differentiating the more difficult speech sounds.

That there is a limit to the availability and usefulness of the plan outlined in this paper, goes without saying. In the first place it is

clear that any method calling for intelligent co-operation and persistent exercise of will on the part of the patient must for obvious reasons fail in a considerable proportion of cases. Except in selected and appropriate cases, it should not be attempted. Again, the end in view may not appeal to the patient. If he is a musician and is chiefly concerned over the loss of certain orchestral values which he formerly appreciated; if he is obsessed by the consciousness of loss or diminution of hearing for his watch-tick; in short, if he has fixed upon certain arbitrary criteria of actual hearing by which to gauge his improvement, it is obvious that no gain is possible beyond what may accrue from local treatment. On the other hand, if the most cruel feature of advanced impairment of hearing is the barrier thereby erected between its victim and his fellows, then I believe that the combined measures here outlined, or perhaps a modification of this method to be worked out later by some abler student of this problem, will prove in the long run to constitute the most practical form of treatment in a fairly large class of cases.

58 West Fifty-sixth Street.

Methylene-blue-silver in Suppurative Middle-ear Inflammations.

ERNST URBANTSCHITSCH, *Monatschr. f. Ohrenh.*, Vol. 48, No. 5, 1914.

To the international flag of otological therapeutics another color is added. The new remedy replaces the mental picture of the Red Sea, due to our painting of the ear and its surroundings with scarlet red, by that of a brilliantly blue Italian sky. It seems that in modern otology dying will be prevented by dyeing. For methylene-blue-silver is even in a dilution of 1:160,000 reliably bactericidal. Its instillation as a 1 per cent solution is indicated in suppuration of both the middle ears and the tube, and in the after-treatment of mastoid operations. Where a large perforation of the drum is combined with slight secretion, methylene-blue-silver should be applied as powder in the proportion of 1:10 boracic acid. The writer reports a number of complicated aural suppurations where a single application of the new remedy brought about a perfect cure. Our rejoicing over the new pus panacea is somewhat quenched by a little remark at the end of the article, that in many, of course not reported—instances the new remedy is a failure. GLOGAU.

HISTOPATHOLOGY OF THE FAUCIAL TONSIL.

DR. T. E. CARMODY, Denver, Colo.

When we take up the bacteriology or the histology of the tonsil, we must first think of the work of Wood, Rosenow, Fetterhoff, Wright and the recent work of Barnes. The work done by others has been largely proof of the work of the three first named, and while I may add something new, it is the work which corroborates that already written, which is most important.

It is not necessary that we go into the embryology or the relation of the lymphoid structures to each other, since these have been dealt with in a previous paper.*

The method of removal of the great majority of these tonsils has been "Sluder's Method," as modified first by Beck, Fig. 1, who demonstrated the same to the author. The tonsil is delivered by this method without tearing or destruction and we believe gives much better sections.

Cultures from tonsillar crypts are of little more value than cultures from the surface, as the same bacteria are found in practically all cases. Streptococci, diplococci and staphylococci, although other forms are not infrequently found. There is, as has been stated, a possibility that many bacteria pass through the tonsil crypts, to the lymphatic spaces and to the lymph nodes, without producing any pathological change in the tonsil itself, evidence of which we see very often. The changes in the tonsil, due to irritation, which are probably always bacterial, vary with the variety and virulence of the infection, the age of the patient and the portion of the tonsil infected.

Why should not every case of acute follicular tonsillitis be followed by peritonsillar abscess? First the plica may extend over the upper lobe of the tonsil to such an extent as to prevent infection. Should infection take place, however, the extension of the plica over the superior crypt or crypts becomes a hindrance to drainage and therefore an aid to infection of lymph spaces and nodes.

Although we most frequently hear the superior crypt spoken of, as though there were only one, we have found two or three crypts opening under the plica in a large number of cases.

*The Histopathology of the Faucial Tonsil, The Laryngoscope, June, 1914

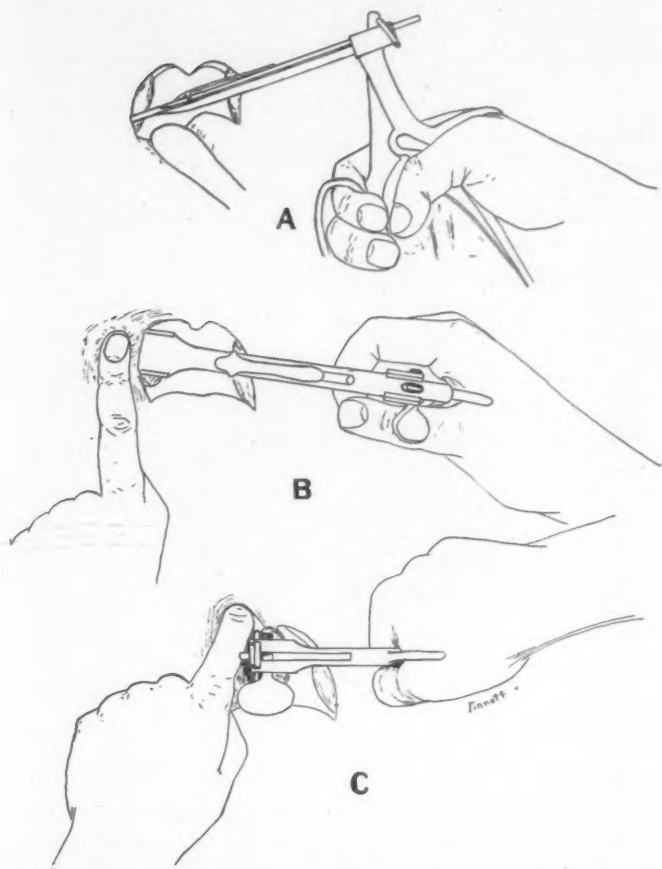


Fig. 1. Beck's modification of the Sluder method for removing the tonsil. Note position of the hand in (A); the instrument being so placed as to allow the lobe of the tonsil to pass through the fenestra while the tongue is depressed. (B) The tongue depressor has been removed and the instrument is rotated so as to face outward and forward while the index finger of the left hand presses against the oral surface of the anterior pillar and forces the tonsil through the fenestra while the blade is being pushed home. (C) The blade is tightly closed and the index finger of the left hand is passed between palate and instrument; with a downward sweep all attachments of the tonsil to the fossa are broken through.

Infection of the inferior lobe of the tonsil is not so likely to cause dire results, because we have good drainage and, in about 70 per cent of the cases, the capsule is not attached to the lower two-thirds of this lobe. Judging from this and from the fact that, in the old cases in which we left the lower lobe, very little, if any, trouble resulted. We may assume that most systemic infections, which may be traced to the tonsil probably enter through the crypts of the superior lobe. Furthermore the lower lobe is not bound down by pillars, except in the small percentage of cases, where the pillars are joined by an inferior plica, enclosing the tonsil in a sac, the mouth of which is incompletely closed. A state in which the upper lobe is usually found.

The burying of the tonsil is due, in my opinion, to the contrac-



Fig. 2. Muscle fibers in trabeculae.

tion of the connective tissue at the base, which draws the organ outward. And because connective tissue is stimulated by inflammation, the base of the tonsil is not only affected but also the lymphoid tissue and trabeculae, and later the pillars. As the tonsil is drawn outward, the increase in muscular fibers in the hypertrophied pillars contract about its mesial surface and the increasing connective tissue in the pillars form a fibrous non-elastic ring which never allows the crypts to empty.

Many operators have noted that the hypertrophied tonsil is not larger than the buried tonsil. This fact has been proven by weighing the organs after removal, a method first resorted to by Coolidge and Garland. It only goes to prove that the hypertrophied tonsil is not a menace to any great extent, so far as infection is concerned, while the buried or submerged tonsil is a

constant source of danger. However, there are other conditions which must be taken into consideration when speaking of infection as an epithelial barrier. This may be broken in many places and allows communication with the lymph spaces. It may be and probably is, very frequently broken by pressure of debris or by other mechanical means. The most likely cause of injury is through toxins devitalizing the cells, the pressure in such cases only driving the toxin deeper into the cell.

Whether or not infection can take place through intact epithelium is still a question. The epithelium covering the tonsil is seldom injured though we may find it entirely lacking just inside the mouth of the crypt and toward the distal end. We have also



Fig. 3. Large blood vessels in capsule and trabeculae.

found a lack of basement membrane and a dipping down of epithelium into lymphoid structures.

The pressure on the lymphoid structures by connective tissue will necessarily cause an atrophy of the lymphoid structures, thereby lessening the combative power of the organ. The pressure is not limited to that made by connective tissue but atrophy of lymphoid structure may be caused by epithelial plugs and debris in the crypts, as shown by sections, and yet we may find crypts widely dilated in sections with no atrophy.

The lymph spaces found near the crypts are connected with the small lymph channels of the epithelium and the brushing away of one epithelial cell gives you a direct channel to the lymph node. Many crypts are dilated, either by being filled with necrotic tissue and bacteria or by a drawing away of one wall from the other by contraction taking place in the trabeculae. It is stated by Barnes

that he never has found the walls in contact, the reason for this being that in most methods of fixing and imbedding tissues, slight shrinkage takes place and this necessarily enlarges existing spaces. We have found the walls in contact a few times, probably due to the fact that the tissue was immediately placed in the fixing solution, but it is remarkable that only one or two crypts in the tonsil will be found in this way, others being sometimes markedly di-



Fig. 4. Blood vessels in capsule and trabeculae.



Fig. 5. Abscess cavity in capsular region. Patient age 8 years.

lated. If we removed a perfectly normal tonsil we would find all the walls in contact excepting where the normal living lymphocytes intervene. There is a possibility that many infections of the cervical lymph nodes may be caused by primary infection of the nasal cavities, accessory sinuses, or from infection in the oral cavity. Infection of the tonsil may take place by infection following the retrograde stream after infection of the lymph nodes as stated above.

It cannot be assumed as proven, that we have a direct lymphatic connection between the nasal cavity and the tonsil crypts in this way; neither can we prove more at present regarding the relation of the gums and tonsils.

We have, it is true, plenty of clinical proof and the experiments of Lenart, who found that after injecting insoluble coloring matter into the nasal mucosa of dogs, particles of the same were found

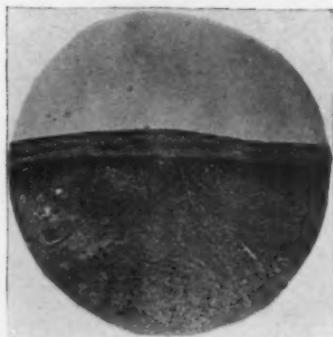


Fig. 6. Basement membrane and epithelium covering tonsil.



Fig. 7. Macroscopic section showing dilated crypts and very few adenoid nests.

in the tonsil as well as in the superior cervical lymph nodes and not only in the tonsil of the side on which injection was made but in that of the opposite side. It remains, however, a task for someone to demonstrate, the path along which these particles of infection pass. This can only be accomplished when some agent is found that will stain the endothelial lining of the lymph vessels without penetrating the other tissues.

Many believe that voluntary muscle is not found in sections of tonsil unless part of the superior constrictor or part of the pillar happens to be included in the mass removed from the throat; but Fig. II, shows muscle bundles not only in the capsule but also extending into the trabeculae.

It is probably not necessary to mention that early in life we have pronounced activity in the lymphoid areas with marked proliferation of leucocytes and plasma cells. The activity in these centers gradually decreases as age advances and more connective tissue

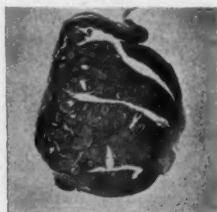


Fig. 8. Macroscopic section showing a few dilated crypts and a number of adenoid nests.



Fig. 9. Dilated crypts with no apparent atrophy of the adenoid nests.

cells, while not exactly taking their places, develop later into fibres which necessarily increase the space occupied by the trabeculae.

In inflammatory condition we first have an increased activity in the adenoid tissue, with proliferation of cells. A little later there is an increase in blood vessels in the trabeculae and capsule. Figs. III and IV.

The germinal areas then throw a large number of cells into the crypts. Leucocytes also gain entrance from the blood vessels and these, with the epithelial cells already dead or dying and the wandering connective tissue cells, fill the spaces which contain more bacteria than they can devour or destroy; consequently, we have

either the formation of an abscess or slow and incomplete resolution with its resulting strangulation of vessels and adenoid nests.

Fig. V. Shows tonsil from a boy 8 years old with an abscess in the lower part of the superior lobe between the capsule and tonsil proper.

Fig. VI. Shows the basement membrane underlying the surface epithelium.

Figs. VII, VIII and IX, show widely dilated crypts. In Fig. VII, although the specimen is very thick, the lymphoid tissue has almost entirely disappeared; in the Fig. VIII the lymphoid tissue has only partially disappeared; while in the third practically not at all.

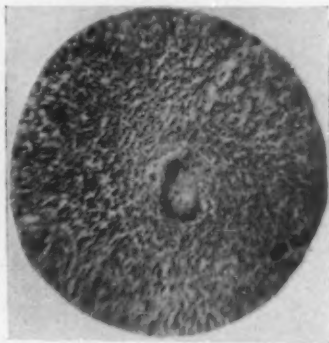


Fig. 10. Giant cell in section from tonsil.

These are sections of entire tonsils and while the dilatation is partly due to plugs, it is largely due to the fact that they are celloidin sections, while those imbedded in paraffin are not dilated to such a marked degree.

While we not infrequently see tuberculosis of the tonsil in the last stages of pulmonary tuberculosis, the primary form is rare, or possibly we should say not frequently proven. Fig. X, from a girl 4 years of age, a patient of my associate, Dr. Lockard. She had run a temperature for weeks with enlarged cervical glands, following an attack of acute tonsillitis. The temperature disappeared on removal of the tonsils, and the glands gradually subsided.

The following history is of special interest: C. K., aged 15, was examined by Dr. Hall, chief resident physician of the Denver City and County Hospital, on June 20, and was found to have large and diseased tonsils, with slight swelling of the left side of the neck, which had been present only a few days. He was told

to return on June 24, to be operated. During the interim he had fallen from the top of a barn and struck the left side of his head. Examination: tonsils appeared about the same, but the swelling of the neck had increased. Patient was kept under observation for one week; there being no change, the tonsils were removed under chloroform anesthesia. No improvement took place in the neck and three weeks later I made an incision from the tip of the mastoid to the clavicle and removed the glands, the whole chain being involved and adherent to the carotid sheath. Examination proved them to be tuberculous and markedly caseous. This was apparently an acute tuberculous process, which would probably have run a chronic course except for the injury. In this form of tuberculosis of the tonsil we probably have a type which frequently heals,

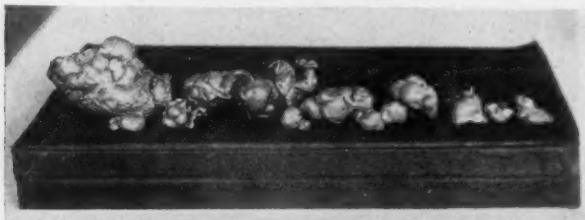


Fig. 11. Glands removed from a boy 15 years old which were proven, on microscopic examination, to be tuberculous. Probably infected through the tonsil.

or one that at least takes years to develop. I have never seen, and know of no case, where ulceration has taken place, although giant cells are frequently found. A large number were present in the slide from which Fig. X was taken although no caseation was found. Neither could we demonstrate tubercle bacilli. Barnes fully agrees with the latter statement.

The author wishes to express his appreciation of the work done by Dr. A. J. Markley, in making the microphotographs and the untiring efforts of Dr. Wm. C. Finnoff, to obtain good sections.

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A CASE OF TEMPORO-SPHENOIDAL ABSCESS WITH UNUSUAL COMPLICATIONS.*

DR. JOHN LESHURE, New York.

The patient, Mrs. T., aged 52 years, first consulted me October 31, 1912, stating that she had been treated about two months for a boil in her right ear.

Her previous history was negative save for occasional attacks of headache and intermittent discharge from the ear.

Physical examination: The patient was a stout, phlegmatic woman, apparently in good health aside from the ear affection.

Examination of the ear revealed a marked swelling of the meatal wall which completely occluded its lumen and rendered impossible a view of the fundus. The auricle and adjacent tissues were infiltrated and edematous, and just above the zygomatic process at a point one inch anterior to the meatus was a diffuse swelling which suggested a deep temporal abscess.

Palpation of this area was exquisitely painful to the patient, but there was no tenderness over the mastoid process at any point. The temperature was 99°, pulse 78, respiration 20.

The tuning forks were heard normally over the mastoid and lateralized to the affected side. Air conduction was zero. There was no vertigo; the eyes and reflexes were normal.

A diagnosis of deep temporal abscess complicating a chronic suppurative otitis media was made and the patient sent to the hospital for operation.

The following day, November 1, incision was made over the temporal swelling down to the periosteum, but only a small amount of pus was found. This was evacuated and a wet dressing applied.

The patient improved for the next few days, but on November 4, the temperature rose to 103.4°, the urine diminished in quantity and was found on examination to contain a large amount of albumen and numerous coarsely granular casts. The patient became drowsy and could be aroused only with difficulty.

Under appropriate treatment the condition cleared up and at the end of a week she was sitting up and planning to go home. On November 11, the patient again became drowsy, and complained of headache for the first time, but an examination of the urine showed only a trace of albumen and no casts. I then suspected intracranial complications, either abscess or gumma, but no focal symptoms or

*Read before the New York Academy of Medicine, Section on Otology, May 14, 1915.

signs could be elicited. On the following day, November 12, I noticed that the right pupil was moderately dilated and reacted sluggishly to light. Examination of the fundus showed a slight haziness of the optic disc but no measureable elevation. The pulse which had averaged up to this time around 72, dropped to 54, her temperature was 99.6°, respiration 24. There was no nausea or vomiting. Cheyne-Stokes respiration was well marked.

There was no paralysis, but the reflexes were slightly exaggerated, and one curious phenomenon was present which was of considerable interest. This was a rhythmical movement of the right arm, *i. e.*, the arm on the affected side. The Babinski and Kernig signs were both absent. The symptoms were evidently those of intra-cranial pressure, and the diagnosis lay between cerebral abscess, probably in the temporal sphenoidal lobe, cerebral hemorrhage, or brain tumor (gumma or malignant growth). With the history of previous ear suppuration the evidence was decidedly in favor of brain abscess. That evening at 10 o'clock a radical mastoid operation was done practically without anesthesia, as the patient was unconscious. The posterior meatal wall was taken down and when the antrum was opened it was found that its roof and the roof of the attic were dehiscent and the exposed dura was covered with granulations. The temporal bone was removed for a distance of an inch exposing the dura covering and temporal sphenoidal lobe. The dura was dark in color and the presenting lobe did not pulsate. The dura was incised and a slender knife entered the abscess cavity at a depth of one-half inch. About two ounces of thin, non-fetid, yellowish pus were slowly evacuated, and the patient began to show signs of returning consciousness almost immediately, so much so that the anesthesia had to be resumed.

Particles of disintegrated brain tissue came away with the pus, which fact suggested that the condition was one of spreading encephalitis. Pulsation was immediately restored in the exposed lobe, and there was no evidence of meningeal infection. The patient was returned to bed in much better condition than before operation. Pulse 120, temperature 101.6°, respiration 36.

On the following day, November 13, she spoke rationally and took nourishment satisfactorily. She was given urotropin gr. 80 p. d. Temperature 102.4°, pulse 108, respiration 30.

On November 14 complaint was made of severe headache and some rigidity of the neck muscles. A lumbar puncture was made and about an ounce of turbid fluid withdrawn. This contained a large number of cellular elements and coagulated soon after stand-

ing. The predominating micro-organism was the pneumococcus.

The lumbar puncture was followed by a considerable improvement in the symptoms and the patient had a fairly comfortable night.

The next day at 8:30 a. m., the temperature was 102° , pulse 130, respiration 34, but as the meningeal symptoms increased in severity towards the afternoon another lumbar puncture was made, withdrawing about one-half ounce of turbid fluid.

There was some improvement in the character of the pulse but at 6 o'clock the temperature had risen to 104.8° , with pulse of 160 and respiration 62. Particles of brain tissue were mixed with the wound secretion which was thin and watery, suggesting rupture into the ventricle.

The Kernig sign was present and most marked upon the right side. The patient died four hours later. Unfortunately permission for an autopsy could not be obtained.

Comment: The case is of interest chiefly from a diagnostic standpoint and the question arises as to how long the abscess had existed.

The patient impressed me as a rather stupid individual and her replies to questions were often evasive, but her relatives had not noticed any particular change in her mental condition, and there were no focal symptoms until the day of operation.

The results are apt to be more favorable when one can do a cerebral decompression, incising the dura, and waiting 24 hours, during which time the sub-arachnoid lymphatic space will become walled off, and the probability of meningeal infection lessened. The support of the dura being thus withdrawn, the abscess is apt to evacuate itself, or at least, the pus will be found nearer the surface. In my case, however no delay was permissible and the chance had to be taken.

Another question is whether the first attack of stupor was due solely to nephritis or partly to the beginning cerebral condition. I am inclined to think that it was entirely of uremic origin.

I have been unable to explain satisfactorily the predominance of the irritative symptoms, (*i. e.*, the Kernig sign and the rhythmic arm movements) to the affected side. A colleague stated that he had seen this phenomenon once before in a case of brain abscess and explained it by a failure of the fibers to cross in the pyramidal tract. This case illustrates the danger of allowing a chronic middle ear suppuration to run on with imperfect drainage. If a radical operation had been done some months before, the patient's life might have been saved.

423 Convent Avenue.

REPORT OF A CASE OF MULTIPLE ABSCESS OF THE BRAIN, OPERATION, RECOVERY.*

DR. JOHN GUTTMAN, New York City.

Intracranial operations, especially for brain abscess following ear affections, are of comparatively rare occurrence. The report of a case presenting such a succession of events, especially when followed by recovery, is, in the writer's opinion, worthy of record.

Mrs. C. C., 33 years old, became sick September 13, 1914, with pain in the left ear. A few days later the drum membrane ruptured spontaneously. There was quite a copious flow of pus, and thereupon the subjective symptoms, as pain in the ear, headache, etc., subsided.

On November 8, about seven weeks after the onset of the disease, I was called in and found the patient suffering very much, and presenting all the symptoms of an acute mastoiditis, and a possible intracranial complication. In addition to the objective symptoms, sagging of the upper wall of the ear canal, insufficient drainage of the purulent secretion of the cavum tympani, edematous swelling of the planum mastoideum, the patient complained of a very severe headache, nausea, sleeplessness, depression, and fever.

On November 9, I performed the usual mastoid operation. In the antrum there was only a small amount of pus, but a good deal of granulation tissue. The following two days the general condition of the patient improved very much. On the third day the temperature rose suddenly to 102° with a pulse of 104. Excruciating headache localized on the left side. The following three days the temperature varied between 100° and 101° . Pulse between 96 and 110. General malaise, nauseating feeling and (once) vomiting. There developed a slight drooping of left upper eyelid, a slight ptosis, a slowness of cerebration, and patient became somewhat irrational. Sensibility for touch and pain remained normal, the labyrinth reaction was normal, although the caloric test on the left ear showed a somewhat sluggish reaction. The eye grounds were normal; there was no Babinsky, and no Kernig. As on November 11 the pulse became as low as 66 and an amnesic aphasia had developed (the patient could not name some of the most familiar objects or per-

*Read before Otological Section of New York Academy of Medicine, May 14, 1915.

sons), it became apparent that we had to deal with a brain abscess or possibly only with an epidural abscess.

On November 12, the patient was again placed under ether, and after removal of the squama of the temporal bone the temporo-sphenoidal lobe was exposed. The dura appeared normal, pulsating without any sign of a diseased condition. Thereupon the dura was split and the brain explored in different directions with a grooved director. When the director was inserted anteriorly and downward about one ounce of thin non-smelling pus was evacuated. The abscess cavity was inspected with the Whiting encephaloscope, no lining membrane was noticed. Thereupon the cavity was packed with iodoform gauze, and the patient returned to bed. The following day the patient was much improved; the temperature and pulse were normal; headache diminished and cerebration improved, but the amnesic aphasia continued. The patient was bandaged daily. Five days later the symptoms suddenly became grave again. The headache returned, the pulse became slow, and the aphasia became more marked. The following day the patient was again placed under ether and the brain explored in different directions. When the director was thrust upward in a vertical direction, towards the cortex of the brain, about half an ounce of thin, grayish pus was evacuated. The pulse immediately improved considerably, and rose from 60 to about 120 before the patient left the operating table. No drainage was inserted in the wound of the second abscess, and only the outer wound was dressed. The following day there appeared a colorless, pulsating liquid, cerebro-spinal fluid, in the wound. On December 20, when the wound was nearly completely healed the patient left my medical care. Her general condition, with the exception of some slight headache and slight remnant of the aphasia was quite satisfactory. The fistula of the lateral ventricle was almost entirely closed. The mental condition was perfectly normal.

EPICRISIS.

According to Hamerschlag brain abscess complicating chronic purulent otitis media is four times as frequent as brain abscess complicating acute purulent otitis media. According to Jansen's statistics the relative frequency is 1 : 6.

In the first operation for brain abscess after exposure of the dura there was no outward sign to indicate that in the depth of the brain substance there was pus. There was no outspoken hyperemia of the dura, no bulging—nothing but normal pulsation of the brain substance. It was very tempting to terminate

the operation right then and there and postpone the exploration of the brain for a later period in the expectation that the symptoms might recede. The history shows, that the clinical symptoms are more to be relied upon than the outward appearance of the brain cortex.

The evacuation of the second abscess cavity after the opening of the first abscess cavity seemed to have cleared up the whole process. Although there is no way of determining whether the second abscess was or was not in some connection with the first abscess, the second abscess might have been only an offshoot of the first, so that the two formed a sort of a dumb-bell shaped abscess; much more probably the second abscess was independent of, and separate from the first one, as may be inferred from the following considerations: (1) the second abscess was located in an entirely different direction from the first one, viz.: straight upward and subcortically, and (2) the encephaloscope disclosed no communication between the two abscess cavities.

The fistula of the lateral ventricle did not seem to have any serious consequences, for toward the end it nearly closed completely by itself. The recovery of the patient is undoubtedly to a great extent to be ascribed to the early operation before any severe destructive process of the brain tissue took place.

60 St. Mark's Place.

The Necessity of More Careful Study of Renal Function Prior to Operation. E. L. KING, M. D., New Orleans, *N. O. Med. and Surg. Jour.*, December, 1914.

All patients should be carefully examined, especially the middle-aged or elderly patients, in order to recognize renal disease. The blood pressure and the cardio-vascular apparatus should be studied. The functional tests can easily be tried and should be made in all questionable cases. The single urinary examination the morning of the operation, performed hastily by an intern, is practically useless. The author reports five deaths from post-operative suppression of urine, which have come under his observation.

SCHEPPEGRELL.

MASTOIDITIS, A PROBABLE CAUSE OF ACUTE NEPHRITIS.*

DR. GEORGE F. KEIPER, Lafayette, Ind.

Beyond the paper of Joseph A. White on the "Report of a Case of Mastoiditis Complicated by Nephritis and Erysipelas with Remarks," before the tenth annual session of this society at Chicago in 1904, and the paper of Thomas Hubbard on "Diabetes and Bright's Disease in Relation to Suppurative Osteomyelitis of the Mastoid," read before this section February 24, 1906, our literature is quite barren as to the possible relation that may exist between mastoiditis and acute nephritis. In the discussion of White's paper, Dench, of New York, scouts the idea that nephritis may be the cause of mastoiditis. Then why not the reverse be true: that mastoiditis may be the cause of acute nephritis?

Friedrichs in his book on "Rhincology, Laryngology and Otology in General Medicine" (1900) writes thus: "It must be admitted that aural disturbances are rare in nephritis. The statistics reported are small as regards the number of cases and not very reliable on account of the limited amount of material on which they are based. It cannot be determined whether any one form of nephritis possesses any special power of producing disease in the ear, but it would appear that chronic diffuse nephritis is more apt to do so than any other." Yet to be specific he does not mention the possibility of mastoiditis being associated with acute nephritis or as being a possible cause of acute nephritis.

To this paucity of literature on this all important subject, I present the histories of two cases where at least the mastoiditis was associated with acute nephritis. In the first case I am strongly of the opinion that the acute nephritis was due to the mastoiditis, which after all is never a confined abscess as many teach yet. For if confined what would be the value of the blood count made to determine the extent of the infection?

Case 1: Edna H., Colburn, Ind., school girl, aged six, was first seen by me January 7, in consultation with Dr. Wagoner, her physician. For ten days prior to my visit she had suffered quite severely with earache in the right ear, and a tender mastoid, the pain

*Read before the joint meeting of the Middle and Western Sections of the American Laryngological, Rhinological and Otological Society, Cincinnati, Ohio, March 1-2, 1915.

from which was controlled by the local application of heat and the internal administration of codeine. Up to the time of my visit no albumen had been detected in her urine. On the date mentioned above the temperature had mounted to 103° , and the pulse was 130. I saw the child at her home at 8:30 o'clock in the evening. The right ear drum was quite inflamed and appeared slightly bulging. I anesthetized it with the mixture of carbolic acid, menthol and cocaine crystals, and incised it. But very little pus presented itself. The child was quite sick and was suffering severely with the earache.

The next day the doctor called me by telephone to tell me that his patient was no better and that the ear had discharged practically nothing since my visit last night. I suggested that he bring the patient to a hospital in the city, which was done and she was admitted to St. Elizabeth Hospital. On arrival I ordered a blood count and urinary analysis. The blood count showed:

Hemoglobin	75%
Leucocytes	15,000
Polymorphonuclears	81%
Small Lymphocytes	9%
Large Lymphocytes	7%
Eosinophiles	3%

The urine showed a trace of albumen and many granular and hyaline casts with pus cells. The amount passed was small.

The right mastoid was exquisitely tender.

These observations were communicated to Dr. Wagoner and he was requested to look after the general condition. Accordingly she was sweated freely. A digitalis leaf poultice was placed over her kidneys. The normal saline solution was administered per rectum by the drop method. Saline cathartics were administered and she was encouraged to drink plenty of water. Basham's mixture was also administered. Dr. Throckmorton was called into the case because the family physician lived so far away.

By January 11, the temperature had dropped practically to normal. When the kidneys resumed their normal function the right ear began to show more pus than ever. This was removed frequently, and the ear kept as dry as possible. Over the mastoid was kept heat continuously by means of the Japanese pocket stove. The tenderness over the mastoid began to disappear.

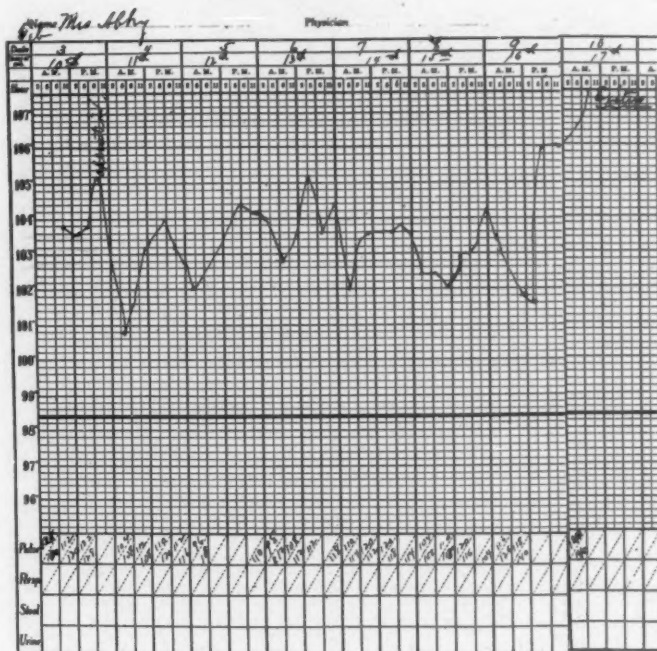
On the 14th the blood count showed the hemoglobin to be 80%, and the leucocyte count was 10,000 per cubic millimeter.

The pus from the ear showed staphylococcus infection, both white and yellow.

The discharge from the ear gradually lessened and by the 22nd, ceased entirely, with complete resolution of all other symptoms. The hearing began to return.

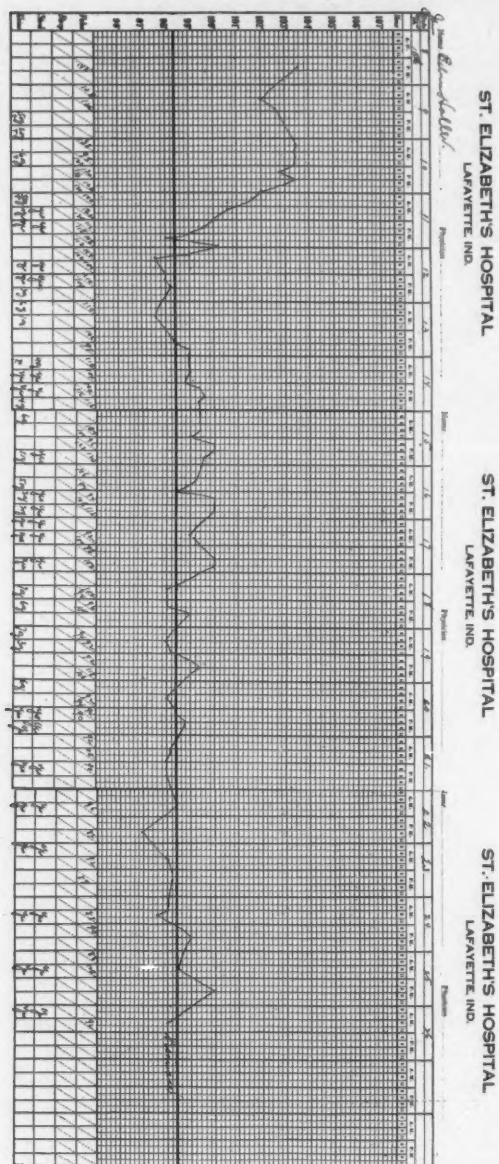
The temperature being normal, now for some time she was discharged from the hospital, on the 26th. No pus, albumin or casts had shown now for 12 days past.

ST. ELIZABETH'S HOSPITAL
LAFAYETTE, IND.



In view of the fact that no albumen showed in the urine prior to her advent into the hospital shall we speculate and say that the nephritis may have been caused by the mastoiditis? It is well known that nephritis may be caused by tonsillitis and peritonsillar abscess. Why not by mastoiditis?

The issue of the next case was not so fortunate.



Case 2: On February 3, I was called by Dr. Hannel of our city to see at 8:30 p. m., Mrs. A., aged 52, on account of a right mastoiditis. For ten days prior to my visit she had had a running ear with tenderness over the right mastoid. She had progressed favorably until this date when her temperature suddenly rose to 103.8° . She was admitted to St. Elizabeth Hospital that morning. Her pulse on admission was 128 and her temperature was 103.8° . She was suffering severely with headache. Her bowels were flushed with soap-suds enema and copious ejecta presented undigested food.

At five o'clock in the afternoon her temperature rose to 104° and she became quite stupid.

At eight p. m. she passed eight ounces of urine. At 7:30 p. m. her temperature rose to 105.2° and she was more stupid than ever. About nine o'clock I saw her with Dr. Hannell and found the following conditions present: right mastoid exquisitely tender to the touch; the right ear drum perforated with a large hole posterior to the malleus handle; the posterior superior wall of external auditory canal was sagging; the pus issuing from the perforation in the drum pulsed very distinctly; the pupils did not respond readily to light and shade; patient semi-conscious; temperature 105° , pulse 128. The last examination of urine a couple of days before was negative. The general condition of the patient very poor.

I advised immediate opening of the mastoid and she was prepared in the usual fashion, and taken to the operating room. She was quickly anesthetized with ether and the operation begun. The primary incision uncovered a very large mastoid process, the largest that I have ever seen in a woman. The cortex was quite firm and the opening into the antrum required considerable chiseling to reach. But a very small quantity of pus was present in the antrum. Feeling that there must be considerable pus present somewhere, I uncovered the mastoid process in all directions even into the zygomatic process. In the posterior cells of the mastoid a considerable quantity of pus was found. I uncovered the lateral sinus but found that healthy. I searched for any dehiscence that might lead us into the brain cavity but found none. She was not reacting well under the ether and the operation was hurriedly brought to a close, the wound closed and dressed and the patient was put back to bed. At 2:30 in the morning her temperature was 100.8° and the pulse 104. At the time of my visit at eight o'clock in the morning we found the temperature to be 101.6° and the pulse 112. I ordered an examination of the urine and a blood count to be made. The urine had a specific gravity of 1025, was acid, and had a large amount of albumen, with

many waxy, hyaline and granular casts as well as cylinroids and epithelial cells. The blood count gave hemoglobin at 80% and leucocytes at 7800. I requested that Dr. Hannell continue in the case to combat the urinary symptoms, which he did in a masterful manner. He ordered his patient put in hot packs to promote perspiration, purged with salines, per rectum normal saline solution given by the drop method, hot digitalis leaves poultices placed over the kidneys, and such other remedies given as indicated to relieve the kidneys. She did not do well at all. The temperature never fell below 102°. It rose at high as 105.2° again as before the operation.

On February — I dressed the wound. It did not look right. The wound was apparently covered with a membrane, which seemed to be necrosis. On the 9th I again dressed the wound. The odor of necrosis was well marked. She was becoming stupid again. Blood had appeared in the urine. On the 10th she passed away unconscious, her temperature rising to 107.2° just before exitus.

She had been passing urine freely before coming to the hospital which showed nothing wrong. On the morning of the day that she entered the hospital the urine became scanty, and of this we took no notice feeling that the mastoid symptoms were the dominant features in her case demanding intervention. To wait for a blood count and urinary analysis seemed unwarranted delay. Here the acute Bright's disease was a very severe complication and which resulted in her death.

Mastoiditis with diabetes is rather frequent, according to the statistics. But not so with nephritis. Therefore every case of suppurative otitis media showing mastoid symptoms should have upon admission to treatment, an immediate blood count, a blood pressure record and above all an urinary analysis, and I state this with all the emphasis in me possible.

14 North Sixth Street.

Radium in Epithelioma and Allied Affections. G. STIRLING, RYERSON, *Can. Jour. of Med. and Surg.*, May, 1914.

The writer claims that, given a sufficient quantity of radium and the technical skill required for its application, this method of treatment gives very excellent results in about 60 per cent of the cases. He gives the history of five cases treated.

WISHART.

**TONSILLECTOMY IN THE ADULT. ARE WE JUSTIFIED IN
DOING SO MANY INDISCRIMINATE TONSILLEC-
TOMIES FOR REMOTE INFECTIONS.**

DR. CHARLES W. RICHARDSON, Washington, D. C.

It has been so thoroughly ingrained into the professional mind, during the past decade, that the tonsils are the source, or portal of entrance, of systemic infection, that one hesitates to direct attention to the fact that independent of the tonsils there are many other focal points which may be as guilty, if not more so than these organs in causing general infection. Indeed, the decree has become so ultra-radical, among many, that the opinion is maintained that the tonsils may not necessarily present visible evidence of disease, nor abnormal size to be a physical enemy to the system which harbours them. The small-sized buried tonsils, we are told, are the greatest offenders. It has been stated that no adult should possess tonsils; from some few of the cases that I have seen, which were to have been subjected to operative intervention, nor even the site from which the tonsils had ceased to exist.

The operation of tonsillectomy has become such an every day practice in the medical profession—having passed beyond the sphere of those seeming most competent to judge of its necessity and through technical experiences best qualified to perform the operation—that it seems incumbent upon us to consider some of the indications for the operation and to inquire if they are not too limitless in their scope, especially in the adult. This operation has become so popularized that even the layman considers himself competent to judge of the advisability for doing the operations and frequently presents himself to us with the statement that he has come to have his tonsils removed.

It is with a great deal of trepidation, therefore, that I make bold enough to call attention to those who have such fixed ideas with regard to tonsillar enucleation, gained from information, knowledge and experiences that there are other pregnant sources of infection which may play as important a role in general infection as innocent, though small and buried tonsils.

There seems to be a tendency to overlook such latent chronic focal centres in other portions of the body as, for example, a suppurating mastoid antrum or attic, accessory nasal cavities, the teeth, gall-bladder, appendix, and seminal vesicles. The tonsils

are so accessible, so easily examined. And without much search or mental effort, if appearances are against them, they can be so quickly condemned for removal. Indeed at times the internist or others seem to make all efforts to prove the tonsils the offending organs when the time could have been well spent in search further away but closer to the cause of infection. I am not inveighing against the removal of tonsils in adults which are hypertrophied, the seat of chronic lacunar infections, of superficial or deep-seated latent abscess, the seat of frequent acute attacks of simple or follicular tonsillitis; those which are painful in deglutition, or tender on pressure, or in which there are recurrent attacks of peri-tonsillar abscess. To remove tonsils in the above enumerated conditions, even though systemic infection may not be manifested, is a most justifiable procedure and the elegant results, at times remarkable improvement, in the well-being of the patient are ample proof of the wisdom of the operative intervention.

What seems to me objectionable, and no doubt to many others, is the frequent removal of tonsils which in themselves show no macroscopic evidences of disease, and in which there has been at no previous period evidences of frequent acute pathological disturbances. That the possessor of this type of tonsils may be the subject of an infection that cannot be accounted for, does not seem to justify the removal of the tonsils upon the hypothesis that possibly it is through them that the infection is brought about and maintained. It has been maintained that in acute and chronic rheumatism and in rheumatoid arthritis, even though the tonsils manifest no evidences of disease, if the primary rheumatic attacks had been preceded by an invasion of acute tonsillitis, such evidence of the tonsils having been the portal of entrance for the infecting organism is sufficient to warrant their removal however innocent they may appear at subsequent inspections.

Numerous instances could be enumerated when tonsillar enucleation has been done for the two reasons given above. wherein total failure of relief followed the operation. Indeed, in my hands, and I am sure under the observation of many of my hearers, keen disappointment has been the issue in many of the cases operated upon under this circumstance. I have observed, no doubt as many of you have, small tonsils, mere folds of tonsillar tissue between the faucial pillars—which have been doomed to enucleation for no other reason than that they existed. In such individuals, at times the general health has been below the normal, or they might possess some type of mild general infection.

Most cases of this type are referred to us from the internist, or come to us because they have heard that the removal of the tonsils will be the cure of all their ills. In some cases the internist, or colleague, has through pressure expressed pus from such tonsils. My experiences in this line have been limited, but I wish to chronicle the fact that in the great majority of such cases, I have failed to express pus; and in many tonsils which I have enucleated, under such circumstances, I have failed after numerous sections to even find the pathogenic surface from which pus could have been produced.

We all have noted caseous superficial and occasional deep-seated collections of gaseous pus-like material which has no external method of escape. These abscesses are not very common and when present are frequently unattended with general disturbances. Indeed my experience with enucleation of tonsils as the possible focal source for chronic systemic infection, wherein the tonsils evidence no marked pathological alterations, or wherein they did not evidence frequent acute disturbances, as enumerated in this paper, has not been attended, excepting in a few isolated cases, with any further results than marked disappointment with regard to the improvement of the general disturbances. I have had also to pass under my observation a number of cases wherein most perfect enucleation had been performed by various colleagues,—the condition of the tonsils being unknown to me—in which the patients state that the operation had been totally resultless with regard to the general infection. In most of these cases the patients were passing on in hopes of being relieved of the faucial dryness secondary to the tonsillectomy. I could mention a number of cases which bear out this contention, but several will suffice.

A man of fifty-five, who had chronic arthritis of nearly a year's duration, was referred to me for tonsil enucleation; fairly large, but apparently normal tonsils. No result from enucleation.

A man of fifty, who traced his rheumatic infection from an acute tonsillitis four months previous to his coming under my observation. Day of operation postponed on account of acute invasion of rheumatism. Tonsils apparently healthy, moderately enlarged. Seemingly a most favorable case for relief from enucleation. No result as far as the rheumatism was concerned.

A young woman with mild general infection. Anemic with mild gastro-intestinal disturbances. Tonsils showing between pillar. No evidences of disease. As they had been suggested

by several internists for removal I felt impotent in my protests. The tonsils were removed. Two years later a chronic appendix was removed with remarkable improvement.

A young married woman. General depression, and loss of flesh. No assignable cause notwithstanding searching examination by internist. Moderate-sized, irregular tonsils. Removal advised. Wassermann double plus. Tonsils never enucleated. Under salvarsan marked improvement.

A professional friend affected for six months with joint infection. Small, healthy looking tonsils. Several colleagues had expressed pus from the tonsils. I had never been able to accomplish this result. Under protest I enucleated the tonsils. No result. Four months later the seminal vesicles were operated upon with subsidence of temperature and marked improvement.

It is hardly necessary to state that the operation for the enucleation of the tonsils is a major operation of some gravity, having immediate and remote possibilities of danger to the welfare and life of the patient and therefore should not be entered into without well-defined and justifiable cause for their removal.

I cannot but contemplate the removal of the tonsils, which are apparently healthy for the reason that they may prevent systemic infection, or because they may be the probable source of general infection, without a certain amount of misgiving. It seems to me, therefore, that one should most conscientiously consider every case wherein enucleation is suggested for chronic systemic infection, if the tonsils are not enlarged or show evidence of local pathological changes, and weigh carefully the clinical evidences, the possible existence of other infective foci, and the experiences of the operator in previous cases of a similar character as to the results obtained, before committing oneself to the suggestion of operative intervention.

A young married woman had her tonsils enucleated two years ago to prevent infection. Two months ago she developed an enlarged cleival gland in the neck just below the jaw. Gland removed containing pus.

Two years ago I attended during the winter season a young school-girl of 17 years of age suffering from frequent severe colds. Fairly large, spongy tonsils. Advised removal of tonsils, when she returned home, which was thoroughly done. This past winter I have seen her much more frequently than the previous one on account of almost continuous cold catching.

1317 Connecticut Avenue.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular meeting, February 24, 1915.

DR. HUBERT ARROWSMITH, CHAIRMAN.

(Continued from April, 1915, p. 256.)

Laryngeal Ulceration in a Diabetic Subject. DR. WOLFF FREUDENTHAL.

The patient was 60 years of age and had consulted her family physician on account of pruritus vulvae. The physician found that she was suffering from diabetes.

Three months ago, she became hoarse and complained of pain in the larynx. When she was examined by Dr. Freudenthal at the clinic, she was suffering from marked dyspnea and there was ulceration of the right ventricular fold. Naturally, he thought the condition due to diabetes. Some fifteen years ago he had described the occurrence of diabetic ulcerations in the throat, and since then has observed them on and off. At that time he differentiated between decidedly malignant and benign ulcers. The former went down rapidly and the others got well almost as quickly. In this case orthoform was applied, and the ulceration has disappeared, but that was not the main feature. There was an irregular swelling all over the larynx, which was covered by a smooth, highly congested surface, and at the anterior commissure there was a false membrane. That was removed, and was reported negative as to diphtheria. The next time the patient called, there was pus at the anterior commissure, and it was concluded that there was an abscess of the larynx. There was no indication for operation, especially as one could not tell where to make an incision, unless a thyrotomy was done, which did not seem to be required at all.

Under routine treatment, the swelling went down, and last Saturday (four days ago) the pain was concentrated on one side of the neck. The hyoid bone was painful to the touch. This pain was relieved somewhat by hot applications. Yesterday, the greater part of the swelling was gone, her voice was clearer, and there was no dyspnea.

Dr. Freudenthal said that the case reminded him of a similar one which he had seen,—a thyro-glossal sinus, which extended up to the tongue,—but this one originated at the hyoid.

Cases of Thyroidectomy. DR. E. V. HUBBARD.

Dr. Hubbard said that through the courtesy of Dr. Coffin, in whose clinic these cases had come under his care, he had hoped to-night to present eight cases, but on account of the inclement weather only two of the patients had appeared. A photograph of another might be interesting. This was the picture of a young woman subsequent to operation for goiter.

The operation had been performed four years ago, when half of the goiter was removed, leaving the other half. An anchoring operation was done, which did away with the deformity of the neck.

One of the two patients presented was an old man, an Italian, 60 years of age, with a remarkable history. He was a luetic, but Dr. Hubbard had not known that in the beginning, and thought it was a simple case of goiter. He was presented as a curiosity.

A woman was shown as an instance of the removal of a part of the gland, with the transplacement of the remaining portion, which was anchored into the median line, thus doing away with any deformity. Dr. Hubbard said that he had done this operation about fifteen times with good results. He first removed one lobe, and then sliding the remaining lobe to the middle line, fastened it to the sterno-cleido-muscle of the opposite side with chromicized gut. This gives a very excellent cosmetic effect. There was nothing else of especial interest in the operation, which was a very simple matter. The young woman was a living monument to the value of the pulmotor. She was put under ordinary anesthesia with ether, when she suddenly, without any warning, ceased to breathe, and had it not been for the pulmotor, she would not have recovered.

A few more words in detail about the man. Some time ago he came to the clinic with what was supposed to be a goiter. He admitted having had specific disease, although that was overlooked at the time of operation. The growth was incised under cocain and the gland was removed. It was remarked that it was a very extraordinary looking goiter. When cut into, the contents appeared to be a grayish, mottled looking material, semi-solid in character. It was sent to the laboratory and was returned with a positive diagnosis of gumma. The growth absolutely replaced the thyroid gland. In size, shape, and position, it appeared to be the thyroid gland; but in structure it was a gumma. It might be termed a replacement gumma.

Dr. Hubbard said that he had never seen such another, nor had he heard of one. The wound healed up nicely and the man was put on mixed treatment. He was not seen again until during the autumn, when it was found that he had developed a sinus, leading down about an inch, near where the gland was. The sinus did not improve under mixed treatment, and he was then given mercurial salicylate injections. In the meanwhile he felt well. Then he was given salvarsan,—about three weeks ago—and the sinus has diminished in length from one inch to about one-third of an inch. He is taking mixed treatment, and healing continues. He has had no symptoms, since the removal of the gland, of any cretinism, nor any of the hypo-thyroid symptoms. There may be some remaining portion of thyroid tissue, overlooked at operation, still functioning, or an accessory gland. The hypo-thyroids are intact and the man's health is good, though apparently he has no thyroid gland anywhere. The indication for operation was obstruction in swallowing, but not pain.

A Case of Goiter. DR. J. A. MULHOLLAND.

This case of goiter, from the clinic of Dr. Harmon Smith, presents a few unusual features.

First, his family history as to goiter: His sister died at 40, and his first cousin at 37, both from pressure symptoms due to goiter. Another

cousin was operated upon for goiter at 20 years of age and made a full recovery. All these cases were on his father's side of the family.

Second, his personal history. In boyhood he was advised by the family physician to abstain from all forms of exercise, as even the slightest exertion brought on tachycardia and general nervousness. He has always been in excellent health except for this tachycardia, and passed the Board of Police Surgeons, being a member of the Broadway traffic squad for years. In 1892, he had typhoid. Six months later, he noticed a small swelling in the lower part of the neck, which has grown to its present enormous size. He has had all forms of treatment,—electricity, cauterization and injections of iodine,—without any improvement. He also had one serum injection, which affected him so badly that he cannot be induced to try it again.

At present, aside from the discomfort of such a deformity, he does not complain except of shortness of breath when lying on his right side. Although the trachea and larynx are much displaced to the left side, there is no interference with the function of the larynx. His Wassermann is negative.

Dr. Law has taken some x-ray plates which show the size of the growth and the displacement of the larynx and trachea and possibly an enlarged thymus.

The question of treatment is an important one. The growth is undoubtedly fibrous. Would a serum be effective? Or, if deemed operative, would the possibility of an enlarged thymus be contra-indicative?

Case of Thyroidectomy. Presented by Dr. J. D. KERNAN for Dr. MacKenty.

This is a young man, 21 years of age, who came to Dr. MacKenty's clinic six weeks ago with symptoms of thyroid poisoning,—marked exophthalmos tremor and rapid pulse. He was operated upon, and you see his present excellent condition, with complete cure of the symptoms. Dr. MacKenty wished me to emphasize two points: The thorough removal of the gland,—four-fifths of it,—and the remaining one-fifth had the vessels to it ligated; so there is little functioning gland. The second point was that the case came to operation very early before the circulatory and renal systems were poisoned by the hyper-thyroidism. The man has gained sixteen or twenty pounds during the last month. Dr. MacKenty thinks that with early and extensive removal a cure may be secured in practically all cases.

DISCUSSION.

Dr. HARMON SMITH said that he had had very little experience in the surgical treatment of goiter as he had turned over his clinical material to Doctors Mulholland and MacPherson, who were especially interested in them. The case presented by Dr. Mulholland was one of the most extensive that he had seen in a man, and the question was whether to rely further upon therapeutic measures or to institute operative procedure. Taking into consideration the tachycardia, the displacement of the esophagus and trachea, difficult respiration, age of the patient and his inheritance, it seemed to be worthy of serious surgical consideration before operative procedures were entered into.

Dr. Smith regretted that Dr. Beebe had been called out of town and could not be present to give his advice in the matter, as he wished par-

ticularly to obtain his opinion as to whether therapy could be employed with advantage in a case of such nature.

DR. CARTER said that doubtless many of the members would remember a patient he showed a year ago, a girl, 13 years of age, from whom he had removed a goiter weighing one and a half pounds. The girl had some exophthalmos, suffered from tachycardia, (her pulse ranging from 130 to 150), and had marked tremor. She was in a bad condition. If she took any exercise she would almost fall into a faint. It was decided that an operation should be performed, as the pressure on the trachea was interfering seriously with respiration. Iodin inunctions over the goiter have produced no beneficial effect. At the operation all of the goiter was removed excepting a piece the size of a walnut, which was left under the sterno-cleido-muscle on the left side. The girl was in a very much better condition two months afterward, but the operation did not seem to have any effect upon her tachycardia for fully four months; then her pulse got down to 100. When last seen, six weeks ago, her pulse was 100. When she came into the office, her exophthalmos had disappeared and she was in very good condition.

In this particular case the removal of the goiter greatly benefited the patient. Dr. Carter said that he would present her to the Section again a little later. It would be difficult to say whether or not Dr. Mulholland's case would be benefited by operation. The patient was so much older than the girl.

DR. HARRIS said that Dr. Hubbard was to be congratulated upon presenting such a series of cases. He had set a precedent which all laryngologists should stand for,—the ability to take care of these cases. It was a reproach to the laryngologists that they should continue to turn over such cases to the general surgeon. Such men as Dr. MacKenty and Dr. Hubbard were doing great service for laryngology.

Dr. Harris said that he agreed with some of the opinions which had been expressed about the questionable value of doing an extirpation in Dr. Mulholland's case. In this connection he recalled the case of a young woman, about 20 years of age, who had a large growth in the neck, upon which Dr. John Rogers operated by tying off the vessels. This was followed by a remarkable change in her general and local condition, and in the tachycardia. She married a month after the operation. It was a satisfactory treatment without the radical operation.

DR. MACPHERSON said he was inclined to agree with Dr. Smith that no medication would do the patient any good. The man had no systemic disturbances, referable to the thyroid, and it seemed to be a case for observation. There was nothing to be lost by that, for a while, at least.

DR. QUINLAN said that the radiograph and the clinical history showed that the patient was suffering from dyspnea. As there was no evidence of systemic disease which would deter one from operation, was it right to let him continue in this manner without making any effort to relieve him? Dr. Quinlan said that he must take exceptions to Dr. Smith's point of view. The man was 50 years of age and showed a tendency to labored breathing when lying down; he might some time have a paroxysm of cough which would terminate fatally. Now, therefore, is the time to act, or it may soon be too late. These operations are not grave in expert

hands, and every day we hear of the wonderful results of goiter operation, from all over the country. The patient seemed to have a right to an external operation by proper surgical methods.

Dr. Harris was right, and the laryngologists should equip themselves to do better work in this field when they are so familiar with the anatomical landmarks.

Dr. HARMON SMITH said that he did not wish to be misunderstood relative to his attitude in this case, and that he had prefaced his remarks by saying that his experience in the surgical care of such cases was limited and that he thought that this particular case should be most carefully considered, before anything of a surgical nature was attempted.

Dr. HUBBARD said that a few years ago he would have hesitated very much about operating upon such a patient as Dr. Mulholland's, and that under a general anesthetic it would be a very serious matter. In the last few years, however, he had operated upon them under cocaine or novocain with no mortality. The pain depends very much upon the patient; some have no trouble, and some have a great deal, but if one goes about it properly and talks to the patient while operating, a big goiter can be removed readily under cocaine. At the same time one can keep a sharp watch on the vocal cords, and by observing the patient and speaking to him one can aid his mentality and aid one's self surgically, avoiding damage to the recurrent nerve.

Dr. Hubbard said that there had been no sharp distinction made between the different types of these growths. One should decide whether it was an exophthalmic goiter or a simple goiter, non-complicated. Operation for Graves' disease is a much more serious matter and often unwisely attempted. He understood that in Dr. Mulholland's case it was a fibrous growth. There was no other evidence of Basedow's disease but a very rapid heart. If it was a case of Basedow's disease, he himself would be most unwilling to operate, but if it was not Basedow's disease he thought that a careful operation under local anesthesia would be perfectly safe.

One of the patients whom he had hoped to present had a goiter removed which weighed three and a half pounds, and she is perfectly well to-day.

Dr. MULHOLLAND said that he thought his patient's goiter was a purely fibrous one. The tachycardia dated back as far as the man could remember, but only in the last twenty-two years had there been any goiter symptoms. Dr. Mulholland said that he was inclined to agree with Dr. Smith and Dr. MacKenty that the man would get along all right without operation for another ten or twelve years. He would be kept under observation and if any untoward symptoms developed, operation would be considered.

Dr. HUBBARD asked if anyone could throw any light on the reasons for there being no hypo-thyroid symptoms in the case he had presented.

Dr. HURD suggested that the man probably still had an accessory thyroid gland.

Dr. HUBBARD said that he had not been able to find any thyroid tissue.

X-ray Plates Showing Papilloma and Sinusitis in a Child. Dr. ABRAHAM.

This little girl is 13 years of age, born in this country of Russian parentage. She came to the clinic a week ago, complaining that she could not breathe through the right side of her nose. She had not complained

of any difficulty in breathing until ten days before that. She gave no history of any discharge or pain. A diagnosis of naso-pharyngeal polypus was made, and a snare was passed into the nose around the pharyngeal portion of the polyp, and it was removed. The polyp could be seen in the post-nasal space and in the nose by tilting the head upward. It was a very large polypus full of fluid, about 4 inches long. The child was then sent to Dr. Quimby for an x-ray plate, which shows very clearly an involvement of both antra. When the child was seen this morning, both antra were washed out, removing a thick muco-purulent secretion. (Two weeks ago this large polyp was removed, there were no other polyp to be seen.) On Friday when she returned I found springing from the same point another fairly good-sized polyp. I am under the impression that they are springing from the antrum on that side. It is my intention to open the right antrum next week.

Syphilitic Lesion of the Hard Palate. Presented by DR. HUBBARD for DR. FORBES.

Male, aged 39; initial and only lesion, sixteen years ago. The patient had no symptoms until last August, when he presented himself at the hospital with an infiltrated septum. A diagnosis of gumma was made. Wassermann, positive. Two injections of neo-salvarsan were given, and mixed treatment. The symptoms continued, the gumma broke down, and a sequestrum came away. In December and January he was given three salvarsan injections, with magic effect. The lesions healed promptly. When presented, the patient was wearing an obturator with a vertical plate to take the place of the septum. His voice was normal.

Blindness Incident to External Ethmoid Operation. DR. HARMON SMITH.
DISCUSSION.

DR. QUINLAN said he was very glad that this subject had been brought up, for it would tend to impress the need of greater care in entering this area. About two months ago a patient had come to his clinic for a condition of obstructed nostrils, and he had removed three well-developed mucous polypi, besides a small one which he took out without any bad results. The next morning the man complained of more or less headache. He was a laboring man who attended furnaces and did work in the cellars of houses. That night the headache became more severe and he was sent to the hospital, where three days later he died of cerebral meningitis. There must have been some dehiscence of bone, and some avenue of entrance for the infection. There was no harsh manipulation in this instance; an ordinary snare was used to remove the growths and the man was apparently doing well. These unfortunate cases may occur in the practice of anyone doing nose and throat work.

Some years ago when he (Dr. Quinlan) was associated with the Manhattan Eye, Ear and Throat Hospital, a young girl came to the clinic giving the history of a bleeder. She had polypoid degeneration, and several operations had been performed in the region of the ethmoid and middle turbinate. It was customary as a precautionary measure to run a line of cauterization along the hypertrophies in treating these cases. This girl had this treatment on Saturday afternoon, and on Monday night she died of basal meningitis. The case was reported and published and

at the time provoked a great deal of discussion in some of the journals here and abroad,—Ziem recording a case of blindness and Lennox Browne a similar accident. Many other minor results were reported following operations on the middle turbinal body and the ethmoid tract.

The greatest care should be exercised when using sharp instruments or cauterants. Of course, in the case presented by Dr. Smith, there was evidence of drastic manipulation, and one cannot be too careful in these cases. Antisepsis and asepsis are very difficult in this region, and one is often shocked by the amount of curetting that is done in some of the clinics. It is rather surprising that more unfortunate results are not seen, and the note of warning struck by Dr. Smith was very timely and opportune.

DR. DELAVAN reported the case of R. D. W., aged 25, who during boyhood suffered a severe fracture of the nose, as a result of which one nasal cavity was entirely occluded by a long, almost horizontal ridge, this being caused by a sharp bending upon itself of the posterior part of the septal cartilage and the anterior half of the vomer. In removing this ridge, by the Bosworth method then in vogue, an opening was made, chiefly through the vomer, about three-quarters of an inch in length and three-eighths of an inch in its perpendicular diameter. Within twenty-four hours after the operation marked mydriasis of the right eye appeared. Twelve days later the mydriasis having continued, the patient was seen by Dr. Richard H. Derby, who found complete paralysis of accommodation of the right eye, the pupil of which was dilated *ad maximum*. The patient made slow improvement under treatment, but when last seen, more than twenty years after the operation, was still suffering from impaired vision, distinctly referable to the above occurrence. The speaker had never met with a similar case.

DR. HURD said that if a man could not keep his bearings through the open external method where everything was directly under his eye, he surely would go astray by the intra-nasal route.

DR. ABRAHAM said that he remembered the case very well, as Dr. Smith had sent him the plates for examination. He did not know whether or not Dr. Smith had examined the case with the pharyngoscope. He recalled distinctly that one could detect through the pharyngoscope the peculiar tissue, and there were particles of this tissue growing on the bone, springing practically from every one of the sinuses. He had advised that some of these pieces be removed for pathological examination. It was gratifying to see that Dr. Smith had obtained such a good result and he was to be congratulated on his work.

DR. HARMON SMITH said that he assumed the same attitude toward these cases as Dr. Abrahams had expressed. Several years ago he had presented to the Section a young girl from whom he had removed a growth of similar size and shape on several occasions. After each removal the growth would re-appear and not until the maxillary sinusitis had been overcome did it entirely disappear. He believed that these growths frequently sprung from the sinus itself and protruded into the nasal cavity and often into the post-nasal space.

DR. HARRIS said that it was well recognized that the antrum is a frequent source of polyps, but only recently has attention been called to the

sphenoidal sinus. A Japanese living in Tokio reports a considerable number of cases, and deduces from them certain rules whereby these large polyps can be recognized as proceeding from the sphenoidal sinus. It was a new idea, but was in line with the fact that most men are coming to believe that these nasal polyps do not come merely from inside the nose but also from the antrum or other of the accessory sinuses, and the source must be operated upon before the recurrence can be prevented.

Case of a Bleeder not a Hemophil. DR. L. M. HURD.

To be published in a subsequent issue of THE LARYNGOSCOPE.

Case of Epistaxis in a Hemophil, Overcome by Blood Transfusion. DR. JOHN D. KERNAN.

The patient was a man, 50 years of age, born in New York, a dentist by occupation. Family history: Parents healthy; grandparents, unknown; sisters, healthy; no brothers; a nephew, a bleeder.

Patient had the measles, with the usual course; has suffered from a bleeding tendency all his life; has had bleeding from the kidneys, bleeding following tooth extraction, effusions into joints, with pain, worse in the last six years; has had four very severe hemorrhages, the last and worst of which is herewith reported,—two of these followed injuries; one, eight years ago, was a nose bleed, controlled by packing. It followed a severe coryza.

The epistaxis now reported began spontaneously on Sunday, February 5, 1914. He bled pretty steadily until Thursday night, when he was seen at midnight. He was then bleeding from the right nostril, which he himself had packed with cotton. Removal of this, showed several bleeding points on the septum, and on the anterior end of the middle turbinate. Packing was inserted, and seemed to control the hemorrhage. At 7 a. m., Dr. Kernan was called again, and started to remove the packing with the intention of plugging the post-nares, but the patient seemed to bleed wherever the nose or throat was touched, so transfusion was decided upon.

February 10, 9 a. m. (Dr. Lindemann's note). Patient very pale; face puffy; loud, noisy respiration; heart action, feeble; pulse, 140. Blood examination: Hb. 14 per cent; cells, 1,048,000; coagulation time, 1 hour, 4 minutes; poor clot.

The patient was transfused at noon, and given 1400 cc. The bleeding stopped at once. That afternoon, he was able to sit up in bed and read. Twenty-four hours after transfusion, Hb. 48 per cent; cells, 2,560,000; coagulation time, 16 minutes. The packing was removed without renewal of bleeding.

Seventy-two hours after transfusion: coagulation time, thirty minutes.

He made a rapid recovery, has had no hemorrhages since, and his joint symptoms have been much improved. Blood, at present, Hb. 80 per cent; cells, 5,000,000; coagulation time, 30 to 40 minutes.

During transfusion, he complained of smothering sensations and chilliness. These symptoms were probably explained by his poor condition and possibly by slight hemolysis, as owing to haste the blood could not be thoroughly tested.

Advantages: Prompt checking of hemorrhage; prompt restoration of blood to functionation; stimulation to blood-forming organs.

The suggestion is made that in case of severe hemorrhage the clotting time of the blood be taken and transfusion considered early so that proper tests and preparation may be made. When the bleeding is due not to local lesions but to the general blood condition, it is logical to concentrate attention on the blood.

DR. HARRIS said that the two cases presented by Dr. Hurd and Dr. Kernan were most interesting and timely. Dr. Hurd had encountered one of the stiffest propositions anyone could have to contend with and was to be congratulated on having secured so good a result. It would be interesting to know whether any complete blood examination was made. Dr. Harris said that a year ago he had watched a man of 50 who was bleeding from his ears, his throat, his gums, his rectum, and his nose. The hemorrhage was very apparent in both ears, and he had had three or four such attacks in the course of two or three years. The patient was in a very critical condition and human blood serum was administered two or three times, 100 cc. in all. The bleeding stopped after the first injection and did not recur. The hemoglobin was very low.

Dr. Harris said that recently at the Post-Graduate he had had several cases where the administration of horse serum was followed by a very pronounced reaction. He preferred to use human serum, and it should be repeated.

Dr. Kernan's case was interesting on account of the beautiful and prompt response to transfusion. We should bear this treatment in mind for it might be the means of saving many cases.

DR. HUBBARD, referring to the employment of horse serum, told of a case in which he had removed the inferior turbinate, and plugged the nose carefully. That same evening as the patient was bleeding profusely, he was admitted to the hospital. After twenty-four hours, Dr. John Welch gave him an injection of horse serum, with the result that inside of an hour and a half the bleeding, though previous to the injection it had been a continuous flow, entirely ceased; 10 cc. of horse serum saved the life of the patient.

DR. HARMON SMITH said that a year or more ago he had had a similar experience to that already cited. He had operated upon a man's nose and the immediate disturbance of the operation had been overcome so that he was pursuing his daily vocations, when one night he started up a very severe hemorrhage. He had packed his nose thoroughly with Bernay sponges and gauze soaked in the various astringent solutions recommended for the purpose, but they had no effect upon the hemorrhage. He then administered 10 cc. of horse serum hypodermically, which effectively controlled the bleeding. One injection was all that appeared necessary.

DR. JARECKY said that the technic of the Lindemann method of transfusion was rather troublesome. The blood has to be drawn, transfused, and the syringes washed out with saline solution, while the canulae remain unattached in the veins. In the *Journal of the American Medical Association*, February 13, 1915, Dr. Lester J. Unger, of Mount Sinai Hospital, described an instrument which he had devised by which the surgeon can do the work easily. One canula of the instrument is inserted into the donor and the other into the patient, and as the surgeon turns a little stop-cock he sends the blood directly into the patient. On the

other side of the instrument the nurse or assistant has a syringe full of saline and as the surgeon reverses the stop-cock injects the saline solution into the donor to wash out the instrument. As blood is again drawn from the donor, the assistant in the same way washes out the instrument for the recipient. The whole operation is easily and comfortably performed within a few minutes.

DR. ABRAHAM told of a child suffering from mitral regurgitation, whose tonsils and adenoids had been removed. The parents were advised to keep the child in the hospital for four or five days, but she was taken home, and on the fifth night he was called in to see her. She had been bleeding, was very weak, the pulse rapid, and the skin cold and clammy; and he found a clot, such as Dr. Hurd had called attention to, five or six inches long. Chromic acid was applied to the tonsils, and the patient recovered.

Another patient on whom he had operated was a hemophiliac, as he found out afterward. He had done a submucous flap operation on the spur, and on the second day the packing was removed. She went on attending to her duties, but on the fifth or sixth day she was taken with a hemorrhage which could not be controlled by the usual measures, packing, etc. She was bleeding through the lacrimal duct, and something had to be done at once. Accordingly, he injected ergotine, and after three hours, during which time two doses were given, the hemorrhage stopped. Since then, he has used ergotine on one or two other occasions with very

DR. HOWE, referring to the use of horse serum, reported a case in which the patient, a man about 25 years of age, had bled to the point of collapse following an operation two years ago, performed by another physician. He also stated that he bled freely whenever cut. Two hours before an extensive submucous resection, he was injected with 30 cc. of horse serum. The hemorrhage which occurred during the operation was very slight, and there was practically no post-operative bleeding. The same precaution had been taken since with other cases, with the same result.

An important point in regard to the use of horse serum or human serum is that if repeated injections are required at short intervals the horse serum can be used; but if it has to be repeated after two or three weeks it may be dangerous to use the horse serum on account of a possible anaphylactic action. The human serum can be repeated at any interval with safety.

DR. CARTER said that his case of hemorrhagic diathesis was similar to the one reported by Dr. Hurd. Dr. Hurd had emphasized one point, and it would be interesting if he could tell why it occurred,—why the blood clots perfectly and yet the hemorrhage goes on under the clot. The blood clot in Dr. Carter's case seemed firm, and the clotting seemed to occur quickly, but the hemorrhage kept on under the clot. Dr. Carter suggests that it is due to an abnormality in the blood vessel itself,—an imperfect development of the muscular and elastic coats,—so that the blood vessel remains open.

In regard to the kind of serum, Dr. Carter said that from what reading he had done on this subject and from his own experience his idea was that it made little difference whether horse serum, rabbit serum or

human serum was used, if it was injected into the muscle instead of into the vein.

DR. QUINLAN, referring to the remarks that had been made about the character of the blood vessels, said that many years ago he saw many more hemorrhages than now, and it had occurred to him that there was some underlying condition in the vessels. Accordingly, he gives his patients iodid of potassium three or four times a day for a week before these operations, and it is now very unusual for him to have a severe post-operative hemorrhage.

DR. DAVIS, referring to the prophylactic effect of injections of human serum, said that two or three years ago a patient came to the office with a recurrent retinal hemorrhage. The same thing had occurred several times until the vision was almost lost in one eye. There was no family history in regard to the hemorrhage; and finally the question of serum injection to prevent the hemorrhages was considered. Dr. Welch was consulted, and two or three injections of human serum were given, but the hemorrhages continued to occur not only in the eye first affected, but also in the other. Finally the man lost his vision completely. The use of the human serum in this instance as a prophylactic measure was a total failure.

DR. HURD said that the condition of hemophilia is due to a condition of the blood. In Dr. Kernan's case the time of coagulation was over an hour; in his own case, the coagulation time was four minutes. It was probably a condition of the vessel walls. Dr. Strong, of this city, made thrombo-kinase, but it was too weak to be of much service. Coagulin kocker-fonlo is now on the market. The patient does not contain the extract in his blood-vessels. The blood will clot anywhere, but it will not stick.

DR. CARTER said that in his case the blood was carefully examined and was found normal.

DR. KERNAN said that the point in using human blood instead of horse serum was to secure the restoration of the blood to a functioning condition. This, horse serum will not do, though it may stop the hemorrhage. In this case there were two things to combat: the bleeding, and the constitutional effects of the bleeding. 1500 cc. of human blood restored his blood so the next day it contained nearly 3,000,000 red cells, and the hemoglobin which had been 14 per cent went up to 48 per cent. That was the effect of the blood transfusion. If the patient had merely needed a decrease of the clotting time, the horse might have sufficed.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Regular Meeting, January 5, 1915.

DR. GEORGE M. COATES, *Chairman.*

Complications Present in Tonsil and Adenoid Work. DR. H. M. BECKER.

Lymphadenitis of globe and orbit is not rare; we may have rhinitis, pharyngitis, laryngitis, accessory sinus disease, bronchitis, swollen and suppurating glands in neck, obstruction to breathing, short lip, lack of development of superior maxillary, high palated arch, deviated septum, irregular spacing and malposition of teeth, defective speech, tuberculosis, nephritis, endo- and pericarditis, septic arthritis, metastatic abscesses, otitis, mastoiditis, peri-sinusitis, sinus thrombosis, brain abscess; some of the conditions frequently present as complicating factors in tonsil and adenoid work. Otitis media as a complication is produced by several modes: mechanical, including obstruction, inflammatory and bacterial. A diseased tonsil is capable of causing otitic suppuration, incurable as long as the offending tonsil is permitted to remain. Treatment of the otitis should be begun by thoroughly cleansing tonsillar fossa and epi-pharynx. The capsular operation should be done in children, the intracapsular in adults. A tonsil operation should never be done during an attack of acute otitis.

In a series of twenty-two patients with thirty-one discharging ears, treatment was given at the time of tonsil and adenoid operation. Chronic cases in which discharge had existed from two months to two years, showed various germ infections, principally staphylococcic and streptococcic, several mixed infections, one colon bacillus and two post-scarlatinal infections. Up to the present time, this treatment has been tried only in chronic cases with perforation.

Method: Immediately after the tonsil operation the ear is wiped free of all discharge and the condition of the tympanum and middle-ear cavity carefully determined. If only a small perforation is present a long posterior incision is made, with an attempt to include the perforation in the incision. After gentle aspiration, the canal is dried, and a five per cent alcoholic solution of iodine is freely placed in the canal, permitting it to flow through the perforation into the middle ear. It is surprising with what ease it finds its way down the Eustachian tube by the favorable position of the head. It may be necessary to use the otoscope, alternately making pressure and suction. Dry gauze is now placed in contact with the drum, not too tightly. In forty-eight hours the pack is removed.

Of thirty-one ears thus operated on, only four had not ceased to discharge at the time the pack was removed. One ceased after six days. The remaining three were the one colon bacillus and two scarlatinal. The colon bacillus ear ceased after four weeks; one scarlatinal after two months; the other has not ceased after one and one-half years. Here the greater part of the tympanum is lost and there is necrosis of the ossicles.

Some radical procedure is necessary. The great majority showed improved hearing; in no ear was there less hearing after operation than before.

The Relation of Diseases of the Nose and Throat to the General Practice of Medicine. DR. HENRY PARRISH.

The importance and value of a thorough acquaintance with the principles and practice of general medicine to the specialist in any department of medical science cannot be over estimated. Numerous diseases affect different parts of the complex physical organism which produce reflex effects and prominent symptoms in the nose and throat. All the organs of the body are united to each other by means of the blood vessels, the lymphatics and general nervous system. Infectious material is conveyed through the blood and lymph channels from one organ to another, and sensations of pain are transmitted from one part to another. A pulsating uvula may point to disease of the heart. Clinical evidence points strongly to the fact that diseases of the lungs and heart occur in connection with affections of the upper respiratory tract as complications and also sequelae of such affections. Septic endocarditis may follow tonsillitis. Asthma is often associated with nasal deformities or disease. Crusta and pus swallowed are the cause of indigestion. Anemia is frequently due to improper oxygenation from a faulty respiratory tract due, for instance, to adenoid growths in the post-nasal chamber. Cough and headaches are frequently due to sinus disease or pressure of hypertrophied turbinates on the septum.

Regular Meeting, February 2, 1915.

Systemic Infection of Middle-ear Origin in the Exanthemata. DR. CHAS. R. C. BORDEN (by invitation).

DISCUSSION.

DR. B. ALEXANDER RANDALL: I have a very disagreeable function to-night in opening the discussion on Dr. Borden's paper. I do take some exceptions to some of the points Dr. Borden has brought forward and in so doing would emphasize all the more the great value of what he has brought to us. I wish to support very heartily all the major points Dr. Borden has brought out. There are some points in the difference of treatment which may seem small matters. I have before now insisted upon the element of prevention of otitis media in exanthemata. It was from Pepper I learned it. I have always a cap in the treatment of a case of exanthemata. By putting a protection over the ears, we save many cases from ear-involvement. I most cordially agree with Dr. Borden in regard to the ice-caps. I never use them. Without a single exception I have used hot water-bags. I do not use cold water on the mastoid—use dry heat—hot douching—glycerine, anhydrous. The point about the nipple-shaped perforation is well taken in respect to adult cases, but except in cases of very destructive active infection I think you will agree with me that this form of perforation is in the early days of childhood and in adult cases marks a dangerous point. In a young child the nipple perforation is the rule and leaves no scar when it has opened. The incision is a poor de-

pendence. The use of the biting forceps greatly facilitate matters. Divulse the opening, do not incise through the opening but peripheral to it. The mastoid is a three-fold cavity consisting of the tympanum proper, the attic and the antrum. Empyema of the mastoid—filling up of mastoid cells.

Every case must be judged on its own indications. I advise you against following my advise in some of these points, but you must have experience to go against a rule. Cases when ready for operation often show no indications at all. I do not wait an hour after I feel that the case must be operated on. Often I wait for days if I think the patient can be brought through without performing an operation.

The use of camphorated oil and hot saline enema are very useful. I have seen many cases clear up by the use of hot saline enema.

Dr. S. S. WOODY: Dr. Borden's paper has been very gratifying for many reasons, especially because of his radical stand. In diphtheria, otitis media occurs about one-third to one-fourth as often as in scarlet fever. Mastoid disease as a complication in diphtheria is very rare. In scarlet fever otitis media plays a more important role. Otitis media is found in ten per cent of all the cases of scarlet fever. Of this ten per cent, three per cent will develop mastoiditis or mastoid disease. One-third of the middle-ear diseases following scarlet fever have discharge as the only symptom. Middle-ear disease is a possibility and should be borne in mind always when handling a case of exanthemata. Paracentesis should be done at the earliest possible moment. In a case of otitis media following scarlet fever I favor conservatism, because of the fear that if an anesthetic is given we may have shock and make the patient worse. I have always felt that operation should be delayed until some incision through the periosteum over the mastoid is required. If, however, we find any carious bone the aural surgeon should be called in.

Dr. S. MACCUEEN SMITH: Dr. Randall has stated that he is conservative. I am considered radical. Dr. Randall's conservatism is due to the individual case. If we two were to see the same case together we should treat the case the same way. In a case of empyema of the mastoid as well as having in mind that the cells are part of the mastoid ear cavity, it is difficult to find out whether the mastoid is involved. Is it a simple empyema or some bone caries? I should operate earlier than Dr. Randall and should thereby escape some of the complications. Many cases of catarrhal otitis media are started by these early attacks and neglected cases of acute suppuration. In all cases of exanthemata the ear should be examined freely and frequently; do not wait until you have had the symptoms. I agree with Dr. Randall that in every case of middle-ear disease the accessory sinuses are involved.

Spontaneous rupture of the drum head versus early incision: The former is particularly true of middle-ear diseases complicating exanthemata. In the latter case, the greater majority that required operation have had spontaneous rupture. Sometimes the coat is a long time rupturing. Owing to the increasing fluid you will get an involvement of the mucous membrane which actually becomes detached and exposes the bone. If the drum head would have been incised early all of this would have been prevented. The ear should be examined frequently with the view of determining whether there is ear involvement, and in cases in-

volving exanthemata the ear drum should be incised early. The drum head should be incised freely and avoid incising frequently. I should like to call Dr. Borden's attention to one unfailing symptom—bulging forward in the posterior wall. When this is present it is a usual sign of ear disease which requires a mastoid operation.

Dr. Borden has spoken of the contagion of the discharge. At the Jefferson Hospital whenever they have scarlet fever, etc., in the children's ward they blame it on the Ear Department. I agree perfectly with Dr. Borden in the use of the ice-bag with the exception of cases of acute incipient mastoiditis. In these cases the ice-bag is worth something; the mistake is that they are kept on too long; they should be kept on from twenty-four to thirty-six hours, and once taken off should never be put on again.

Dr. STAUFFER: Most of the cases of mastoiditis have not shown symptoms of mastoiditis. Every case of middle-ear disease has pus in the mastoid antrum. Dr. Borden has set a good example in operating early. He is to be commended upon this. Ether is a stimulant; bacterins are not of much value in ear conditions. I cannot agree with Dr. Randall in that he does not use the ice-bag. I agree with Dr. Smith and use it in early stages. When is a case of empyema of the mastoid to be operated on?

Dr. MCKENZIE: Dr. Borden has spoken about the Surgical Department referring cases to the Ear Department in cases of fracture of the skull. The point which the doctor tried to bring out most was that cases in exanthemata with a kidney involvement show a clearing up of the kidneys if the mastoid is operated when the mastoid is involved. In this I think he is correct.

I should like the doctor to tell us as to how many cases of scarlet have kidney complications without ear complications; how many have ear complications without nephritis and how many have both. Deaf mutes give a history of measles more often than scarlet fever. Fistula through the cortex is a late symptom of mastoid involvement. If you do find this the mastoid involvement is of some duration. I cannot agree with the doctor. I have found this condition quite early.

When I have made a diagnosis of mastoid empyema, I do not wait. Many times when the symptoms are mild and we operate we find a bad condition. My motto has been—in case of doubt operate. In cases of suspicion, operate. A certain proportion might have got well without operation. I do not feel quite safe in leaving them go. Hot applications work well in the majority of cases. The way the child takes to heat or cold should be considered. The patient often gives us the best indication as to which should be used. Some cases do well by the alternate use of the two.

There are many cases of mastoiditis where the symptoms are very slight. The worst cases are those which are not the frank ones. The patient may even have a sub-normal temperature.

Dr. STAUFFER: I simply want to emphasize the point Dr. Borden brought out about vomiting in middle-ear diseases, in children especially.

Dr. STOUT: Will the doctor kindly tell us what is the condition of the hearing after operation?

CHAIRMAN: I believe in the use of vaccines in certain cases. By the use of autogenous vaccines healing was not delayed. Bacterins are used to reduce the time in drying ears. In regard to prophylaxis, the only way to prevent them is to take out the adenoids as Dr. Borden mentioned. The number of acute otitis medias has decreased. Dr. Borden, as I understand, does the simple mastoid operation for the following reasons: (1) to preserve the hearing by draining the ear; (2) to reduce time of running ear; (3) to relieve pressure and relieve danger of infection.

DR. BORDEN: When they wait eight or ten weeks for the symptoms to subside, what has happened to the hearing? If you see the case six weeks later you will say nothing has happened. Later in life however the patient will not hear at all. This is one of the great reasons why this radical operation is of great importance.

I am inclined to believe that there are different results in different cities because of difference in climate. In the South they do not have as many mastoids as in Boston. We would rather have these troubles in the summer time. Dr. Woody spoke of the rareness of mastoiditis in diphtheria. I have seen a few cases and have had not symptoms at all. In adults 40 per cent having middle-ear conditions develop mastoiditis. A patient who goes through measles without any active symptoms of mastoiditis does not develop it.

The anesthetic is not a great danger. No troubles result. It acts as a stimulant. You do not know in what cell you will find infection. The hearing apparatus will not stand being bathed in pus and since mastoiditis is a slight operation, why should it be subjected to this danger? After operation, vaccines may help. Long paracentesis is no better than a short one-eighth-inch, you will have a perforation the size of a pin head. one. It makes no difference whether the incision is one-fourth-inch or

Meeting of March 2, 1915.

"The Technique of Tonsillo-adenectomy and Control of the Hemorrhage."

DR. C. F. ADAMS, Trenton, N. J.

The method of removing faucial tonsils has undergone numerous changes since the invention of the tonsillotome. As the operators became more expert, dissection with scissors was added and the wire suave, hot or cold, displaced the tonsillotome. He finds the suave no more necessary than the tonsillotome or the guillotine.

The method is simple and requires less time than the suave. Patient is placed on their left side, head two or three inches lower than the body, mouth is held open with a Jansen gag, tonsil grasped with a Bruening's septum forceps; drawing it well out from the pillars and depressing the tongue with blades at the same time a vertical incision is made through mucous membrane at anterior margin of capsule with Cryer's periosteal elevator. Dissection is continued and tonsil freed from pillars. If attachment of tonsil at base is too firm to yield readily to the dissector, it is severed with a long-handled bistomy.

The Pharyngeal tonsil or adenoids are removed by a Barnhill curette. The posterior nares are curetted through the nose with a Kyle's ring curette, the inferior turbinates broken with a Sinexon's nasal dilator.

A 5 per cent tincture of Iodine is applied to the wounded surface. Careful dissection of the mucous membrane is important, as the annoyance of dry throat after operation is not due to the loss of tonsil but to the loss of mucous membrane and the lymphatics attached to it.

DR. ADAMS (closing): We say we have never had a serious hemorrhage and still we not infrequently hear of loss of life by hemorrhage. We often do not realize how much blood is lost.

The tonsil and capsule should be taken out and nothing else. At one time I used a punch and left the capsule; afterward I found it necessary to remove the capsule to get results. The capsule thickens and is often a source of annoyance. When the tonsil is diseased it is usually diseased throughout and not in any one part of it.

Carcinoma of the Tonsil. DR. WM. PENN VAIL.

Dr. Wm. Penn Vail reported four cases of carcinoma of the tonsil occurring in Philadelphia within the past six months. Two were in females and two in males. In none of the cases was there any family history of malignancy. Three were certainly primary (and probably also the fourth) in the tonsil. The age of patients varied between 45 and 67 years. Duration of the trouble before entry in the hospital varied from four months to two years.

Only a small amount of adenitis was present in each of the four cases. The only suggestions as to etiology were that both the males were excessively addicted to the use of both alcoholics and pipe smoking. All four cases had very poorly cared for teeth. Two cases were considered inoperable and were given Colet's fluid without benefit. Two were operated upon, one by external removal of tonsil and surrounding structures (died within 5 days from pneumonia) and the other by removal of affected tonsil (died after 75 days from hemorrhage from recurrent growth). X-ray applied to the recurrent growth gave no relief, either to pain or to lessening the rapidity of recurrence.

Conclusions: Importance of early diagnosis of enlarged tonsils in adults, if necessary by excising a portion for microscopic study. If malignancy is found, early and extensive removal is the only safe course to pursue.

DISCUSSION.

DR. P. SAMUEL STOUT: X-ray does not penetrate from the outside. Ides' treatment, operation and then liberal use of radium, ten to twenty thousand dollars of radium must be used. Recently had it used in two cases of epithelioma. We begin to atrophy at age of 40 and then carcinoma of tonsil is rare. Traumatism must in a measure be ruled out, for traumatism always taking place when we eat.

DR. WM. R. BUTT: He has seen five cases of carcinoma of tonsil, two of which were operated on radically; both went on to death, similar to those without operation, but with added discomfort of operation.

DR. KAUFMAN: Some time ago, I saw a case of carcinoma of the tonsil, which seemed to be confined to the tonsil; no palpable glands. He went to a chiropractor, and thought he had been somewhat relieved; the next thing I heard of him he was in the surgical ward of Jefferson, with an inoperable case and died in that institution.

"Carcinoma of Tonsil, with report of cases." DR. WM. PENN VAIL.

DR. VAIL (closing): X-ray treatment was given first from the outside with special tube through open mouth but the patient gagged and it was unsatisfactory.

Is a Modified Radical, or Heath Operation a Justifiable Procedure?

DR. A. SPENCER KAUFMAN.

A modified radical, deato-tympanic or Heath operation is very much abused, both in its application and by its critics. Users often fail to follow indications and properly select cases for the particular operation indicated.

The operation consists in performing a simple mastoid or Schwartz operation, and removing the posterior bony wall of canal to within a quarter of an inch of the annulus tympanicus; dividing the cartilaginous canal into flaps, and closing the posterior wound entirely. The contents of the middle-ear are not disturbed and all post-operative treatment is carried out through the external auditory meatus. Its object is the cure of suppuration, repair of drum membrane, restoration of hearing. There is a certain class of cases to which this operation is adapted; not to supplant either the radical or simple operation but to take care of a group of cases in which it is indicated. During the performance of a simple mastoid operation, the bony canal is occasionally found to be very necrotic. To remove all the bone would subject the patient to the danger of a collapsed canal, and to do a radical operation under these circumstances would result in loss of hearing, but if the tympanic ring is left intact and the contents of the middle-ear undisturbed, the result on hearing will be the same as in a simple operation. We find chronic cases in which the disease is confined to the antrum (mastoid and ossicles in place) and some membrane remaining. The membrane in these cases, after a Heath operation, will reform and the hearing be much improved. The typical case for a Heath operation is one where the patient complains of a discharge having continued for some time, examination reveals a large perforation of the tympanic membrane and the ossicles are plainly visible. X-ray shows necrosis of the mastoid and antrum.

Conclusions: It is a justifiable operation in: 1. Chronic mastoiditis, where there is only partial destruction of the tympanic membrane and the ossicles are in position. 2. In cases of acute mastoiditis, with an unusual amount of destruction of the tympanic membrane and loss of hearing. 3. In cases of acute mastoiditis with extensive necrosis of the bony portion of the external auditory canal.

DISCUSSION.

DR. WM. R. BUTT: Theoretically, Heath operation advised for aesthetic effect. This operation accomplishes nothing more than simple operation, but there is one difference and possible advantage in draining through posterior canal thus avoiding open wound behind for several weeks.

DR. KAUFMAN (closing): I cannot account for the great loss of hearing, unless it was due to an exudate, which was usually visible on the mucous membrane of the tympanic cavity. The hearing began to improve shortly after operation. He has been back at his place of employment for 17 months, and has used an ear phone only four times,—when he first returned.

It is only a question of time when both the Heath and radical will be rare operations, as the simple, done early enough, avoids the necessity for either of these.

The Use of Stimulants in the Nose. DOUGLAS MACFARLAN, M. D.

We are often found to be using remedies in our nose and throat work in an habitual or subconscious way. With the older men it may be from familiarity, but with the younger men it comes from a less complimentary habit. The bacteriologist does not depend on one preservative, nor on one fixative, nor in one antiseptic, nor on one stain. Why does he have a list of phenols, alcohols, mercurials, and coal tars? How is it in our business? We find the whole profession using argyrol empirically,—not that we are universally disagreed as to its value, for it is popular,—but how many of us are using it without any particular knowledge of it and without an endeavor to learn its values and limitations. It is this very empiricism that with the laity has made fat the proprietary man; and can we see an analogy between it and this bad habit of ours.

A study of the physiological effects of drugs, whether used internally or locally will be of the greatest comfort to us when we prescribe. We have a great variety of remedies to select from in the treatment of most complaints and there are differences and shades of difference between them that will direct their particular selection in individual cases with correspondingly neater results.

The atrophic results with the stimulants are often remarkable, for the effects produced are almost identically opposite the manifestations of the disease. The irritation exercises and increases the secretory powers of the mucous cells that remain, the nose becomes moister, the throat in consequence less irritated, crusts come away more easily and eventually disappear. With them goes the ozena, and often to some degree the anosmia that may have developed. The mucous membrane from its dead white atrophic appearance takes on a pinker and fresher color, evincing a vascular return. These are the results that are obtained with the stimulants when they are used in *strong enough solutions*; the tendency is toward timidity with them because the patient complains of the free rhinorrhea, lachrymation, stinging and burning caused. But the milder solutions that do not produce these effects do not give results. I have been in the habit of using a 1 per cent solution of double iodide of mercury as an application to the nose on first treatment and from the reaction to it I judge the strength of spray that I give the patient. The spray is used four to six times a day and later less often as the condition improves. As a rule the atrophic cases are more insensitive than normal so that sprays of 1 per cent double iodide or $\frac{1}{2}$ -1 per cent formaldehyde can be given. Reaction is essential. Bleeding may be set up and naturally indicates that the treatment is too strong; the solution should be diluted but not abandoned. Incidentally, I have lately tried emetin ($\frac{1}{2}$ per cent solution) at the suggestion of Dr. Ivy, who used it with success. It is another irritant, and acted with just such effect as the others on an old antrum infection of some years' standing.

In conclusion, I would make a plea for the careful observation of our remedies, seeking the physiological effects of our drugs and applying it to correct pathologic conditions we meet. It would be well to avoid, if

possible, hobbies in drugs. Study them as entities and not *at first* in relation to the conditions we use them for and select them by comparisons.

DISCUSSION.

DR. ROSS HALL SKILLERN: We have followed blindly and slavishly our forebears in the empirical use of certain drugs and formulae. Take for example the old M-C-A. mixture. We always conclude our treatments by spraying this into the nose and throat, and to what purpose? Arzyrol is another much-flouted remedy which, after most exhaustive trials in all strengths, has only proven a disappointment. Warm, sterile normal saline solution is, after all, the best general solution for the diseased nose. We must recollect that the infected sinus fairly swarms with pathogenic micro-organisms while in the normal state it is sterile. In acute cases the mere flushing out with the saline solution is all that is required in the majority of cases to bring about a complete cure. It is doubtful if the addition of carbolic acid, sulphate of zinc, silver nitrate, etc., hasten the resolution. In chronic conditions it depends largely upon the pathological changes which the mucosa has undergone, how much benefit will be derived from any irrigation. There is no known germicide which can be effectively used in the nose without a severe reaction and even superficial necrosis of the epithelium. Under these circumstances the use of a strong antiseptic solution is contra-indicated and the use of a weak one futile.

DR. MACFARLAN (closing): Dr. Alexander asks the amount of reaction and the rapidity in which results are noted. The degree of reaction depends upon the strength of the solution used; to a slight extent upon the amount used, but more particularly upon the irritability of the patient. The latter is variable and each case is a law unto itself irrespective often of the duration of the case (speaking of atrophy). Advanced cases may show marked, and incipient cases slight, reaction to the same strength solution, and vice versa. Results are always forthcoming within a week or two and often more quickly; and here, too, the old case may often show improvement sooner than the recent one.

Dr. Skillern speaks of sterilization of the nose and the absurdity of its purpose. My object is not to sterilize but to stimulate. It happens that the double iodide solution is a good antiseptic, just as formaldehyde, and I believe this quality of possible benefit in a purulent insensitive nose.

The gross carelessness of the younger men in the use of remedies thoughtlessly is seen in the giving of oily sprays or solutions containing glycerine, to cases with dryness, further dehydrating them and making them dryer.

Dr. Allen J. Smith has stimulated the use of emetin in pyorrhoea by having found the ameba in the pus, also in the tonsil crypts; I looked for the ameba in the pus from this antrum but had already used the emetin the day before. They are supposed to disappear from the pus very rapidly after its use. I had washed and freely drained this case for weeks in the past and this time on the instillation of emetin three times the case cleared up. This seems remarkable, for all this happened in less than two weeks' time. I ascribe it to the irritant action of the drug, for even in $\frac{1}{2}$ per cent solution, on some of it getting into the pharynx, it sets up an acute inflammation of a few days' duration.

Regular meeting, January 27, 1915.

Orthodontia in its Relation to Rhinology. DR. MERSHON.

President and Members of the Laryngological Society of Philadelphia: The orthodontist has long realized that some plans of his work was retarded or inefficient, did he not have the co-operation of the rhinologist in the treatment of these cases and it has been his custom to refer the patient to the rhinologist before he would undertake the correction of the dental irregularities and at the same time the orthodontist has had the growing belief that there are many phases of the orthodontic treatment that might be of assistance to the rhinologist in acquiring satisfactory and permanent results of his work.

He outlined some of the relations that exist, which are of mutual interest to the rhinologist and orthodontist. A large percentage of those cases coming to the orthodontist for treatment are those cases that have at some time been associated with nose and throat difficulties. Almost all the cases that the orthodontist has to treat have to do with a lack of development and I believe that the lack of development of the dental arch, closely associated as it is with the nasal arch, may be an even larger factor than we have been able to realize.

You, of course, always recognize the high, narrow arch with the protruding anterior teeth. If you will examine these further you will also recognize that the lower teeth in their relation to the upper ones are distally disposed, usually to the extent of a bicuspids. You will also notice that the lower anterior teeth are usually super-erect until they are in contact with the gum tissues of the palate. You also notice that there is an apparent and probably an actual lack of development of the bone associated with the nasal tract, together with an absence of normal lip function. There is also an usual appearance of lack of general development with a corresponding absence of physical tone.

He divided our considerations under three heads:

1. The lack of development of the nasal tract.
2. The absence of normal lip function.
3. Habit.

He thought that in all cases of marked pernicious mouth breathing there is a lack of space in the nasal tract for the patient to acquire a sufficient amount of air for its use.

In the lack of nasal space you have three phases:

1. The pathological conditions of the nasal membranes and hypertrophy of the soft tissue. This phase is, of course, of no concern to the orthodontist.)
2. Cases of deflected septum, this I think may be made possible by the mal-development of the dental arch, such as an abnormally high palate, presenting an insufficient amount of room for a normally developed septum.
3. A lack of lateral development of those bones forming the outer walls of the two nasal tracts.

At this point the pertinent question arises as to whether there is anything that the orthodontist can do that may assist in the correction of the mal-development of these factors. The orthodontist knows by actual experience that there is practically no limit to the amount of de-

velopment that he may acquire with the proper use of forces upon the dental arch. And there are many evidences which seem to prove that the development of the dental arch also has its effect upon the development of those bones associated with the dental arch and therefore, step by step, the influence will be felt upon those bones which go to outline the nasal tract.

He believes that the suture of those bones comprising the nasal tract are capable of being influenced in a manner to give us an added area. In the treatment of these cases, we are chiefly concerned with patients during the period of most rapid development and we know that at this time the sutures are undeveloped and forces applied in the proper direction and over a proper duration of time would to my mind cause these sutures to be opened up and developed in a direction that would give us a much larger nasal tract.

The treatment of these cases to produce the desired results possess many factors of the utmost importance.

To begin with the age of the patient is one which must not be overlooked. I believe the best results are possible to be obtained up to ten years of age, however, I do not say that after puberty results are impossible—they are obtained at a much greater effort and diminishing in satisfaction as the patient grows older. It seems to be the best time to begin treatment where results of this kind are desired would be from four to seven years of age. Nature's normal period for the lateral development of the dental arch is during the time of the development of the permanent incisors, this should be completed at seven years of age. Any lateral development of the dental arch that has not taken place normally at five or six years of age, must be produced artificially, or never acquired. There is a pernicious idea existing in the minds of the Medical and Dental profession, even to the present day that any treatment of this sort should be deferred until the patient is approximately twelve years of age. This is a dangerous idea and results in a great deal of harm and should be uprooted as soon as possible.

Next the character of the work required to produce these developments artificially is one that requires a most careful consideration. It is humiliating to the orthodontist, to have to admit that up until a few years ago the character of his work in the correction of dental regularities, was such as to produce exactly the opposite results, to those which we desire. For instance the moving of teeth was done in such a way as to tip the crowns of the teeth outward, consequently at the same time the spices of the root or to be more definite the apical arch was contracted, therefore having a tendency to contract the nasal arch rather than to expand it and it is unfortunately true that a considerable orthodontic work is being done in the same manner at the present time. In order that the desired results should be obtained, it is necessary that the forces applied upon the teeth will be such as to carry not only the crowns outward but the entire root and therefore produce a stimulation in an outward direction of those bones associated with the roots of the teeth and in this manner to stimulate an outward development of the bones step by step until all of the bones forming the nasal tract and the base of the skull shall also be stimulated to develop outward in their lateral direction.

The rapidity with which this work is done is also a matter of very careful consideration. We know that bone development takes place very slowly and in order to acquire development of any amount, it must continue over a considerable period of time. Therefore the rapid movement of teeth, while it may be attended with good results as far as the relation of teeth, while it may be attended with good results as far as the relation influencing the development of those parts with which you are concerned.

This relation also has an important bearing upon the suture changes of which I have already spoken. A force brought to bear upon a suture, will be very quickly attended by changes—those changes in order to be permanent must be retained for a considerable length of time, until the bone building has taken place upon the edges of the suture.

The physical condition of the patient, is one which also requires careful attention. Every aid should be enlisted that will obtain the most satisfactory condition of all vital activities to insure the best bone development, otherwise our efforts will fall our highest expectations.

The relation of the lips is a condition that requires careful consideration. Long continued mouth-breathing together with the typical relation of the teeth associated with these cases brings about a malformation of the lips which has much to do with the prognosis of these cases. The upper lip is very much shortened because of the protrusion of the upper anterior teeth, while the lower lip, because of the lack of prominence of the lower anterior teeth, together with protruded superior incisors, is caused to roll outward and downward. It seems to me that these conditions must be corrected, if we are to hope to reestablish normal breathing.

DR. ROSS H. SKILLERN: I became interested in this subject about three years ago, as a result of my daughter's condition. At three years of age she was operated on for adenoids and tonsils, and two years later was reoperated upon. I sent her to Dr. Merston to get her teeth straightened out. Nasal respiration was improved and she began to pick up. Not one of you here have operated and have not had the mother of the patient say that she was disappointed in the result. We are all familiar with this. Why do we have this facial deformity? It is primarily due to interference with normal nasal respiration. Nasal respiration has everything to do with the development of the nose and accessory sinuses. Lack of nasal respiration causes these deformities in the upper jaw. Adenoids have caused lack of nasal respiration, or inability to breathe properly through the nose. Why do we not cure our cases as soon as we take out the adenoids? The younger the person the more amenable matter we have. The longer the nasal respiration is interfered with, the greater the deformity and the more difficult to restore the normal condition. I think now that we should work hand in hand with the orthodontists.

DR. ROWE: I know every statement to be very conservative; I would be more radical in my remarks. When the orthodontist has done his work there is very little left for the Rhinologist in respect to respiration aside from the removal of adenoids and tonsils. Nasal obstruction is associated with malocclusion. The question arises is there nasal obstruction in cases where there is no occlusion? Personally, I believe

that cases of nasal obstruction are comparatively rare where normal occlusion exists. The loss of a single tooth creates loss of development of the maxillary bones. I personally have never seen a case of nasal obstruction with normal occlusion. It was shown conclusively that one could anticipate the probable malocclusion of the permanent teeth.

DR. HUGGINS: I wish to sing a word of praise to the orthodontists. I believe orthodontia to be the long sought for missing link. The orthodontist has taught us proper occlusion. We have never appreciated it. They have started to teach that it is possible to get air passage not by removing the bone, but by adding bone.

DR. MERSHON: When teeth are moved, the bone is not moved with it; this is a fact not clearly understood by dentists and medical men; pressure produces stimulation on the bone.

DR. WEEKS: It has been my conclusion that sucking of the thumb will produce almost the typical conditions as produced by mouth breathing. If within six years after the latter complement of desiduous teeth are presented, you do not see spaces, lack of lateral development will occur.

Anaphylactic Reactions Occurring in Horse Asthma after Administration of Diphtheria Antitoxin. J. L. GOODALE, *Boston Med. and Surg. Jour.*, May 28, 1914, p. 837.

Goodale gives his researches on patients suffering from horse asthma in an effort to discover simple anaphylactic reactions, to determine whether diphtheria antitoxin can safely be administered. The first tests employed were the placing of a drop of antitoxin serum on the anterior end of the inferior turbinate and the second, the scratching of the lobe of the ear after a drop is placed on it.

In three out of eight cases subject to horse asthma typical irritative reactions were obtained in a few minutes and lasting two to three hours: in the nose a pale edematous mucosa resembling hay-fever; in the ear lobe an anemic border immediately about the scratch with redness and general swelling over the rest of the lobe.

Other cases not suffering from typical horse fever gave correspondingly atypical reactions. The author concludes that the series is not extensive enough to prove anything, but suggests that these reactions may be efficient bedside-tests where antitoxin is to be given to a patient susceptible to horse fever and allied diseases.

BERRY.

